

TOWARDS IMAGES OF SUPPLY CHAINS IN A SUSTAINABLE WORLD: A
CONCEPTUAL EXPLORATION OF METAPHOR FOR SUSTAINABLE SUPPLY
CHAIN THEORY DEVELOPMENT.

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Abstract.

This thesis provides an account of an exploratory and reflective conceptual investigation into metaphor in the context of sustainable supply chain theory development. The sustainable supply chain field is at a turning point in its development as recent work has cast a critical eye over the field's ability to make meaningful contributions to addressing the sustainability challenge. Evidence from the metaphor literature shows that metaphor has a powerful role to play in supporting the field's goals, but such capabilities have yet to be realized in the sustainable supply chain field. The study's exploratory and reflective approach is characterized by iterative engagement with metaphor theory from the perspective of sustainable supply chain theorizing, and on sustainable supply chain theorizing from the perspective of metaphor theory. This has provided a novel vantage point from which to demonstrate the significant potential of metaphor for addressing the needs of the sustainable supply chain field, as well as to generate authentic and novel insight into how that potential can best be operationalized. The Approaches to Metaphor framework anchors the thesis by depicting a broader research agenda for working with metaphor in the sustainable supply chain field. By explicitly accounting for alternative approaches to theory development, it contextualizes approaches to working with metaphor in terms of alternative theorizing goals. In so doing, it demonstrates the extent to which existing approaches to working with metaphor in supply chain theory are insufficient for the needs of the sustainable supply chain field. Based on cognitive perspectives on metaphor, the thesis conjectures that metaphor provides some explanation for the trends and limitations observed in sustainable supply chain theory development. By critically engaging with the metaphoric landscape of sustainable supply chain theory, it positions metaphor as a locus of change for addressing limiting trends and opening up new pathways. The thesis makes its most significant contribution in the development of the Metaphoric Transfer Pathways framework. The framework represents an accessible resource which offers process-based guidance for metaphor-based theory development. In so doing, it will not only benefit sustainable supply chain scholars in harnessing the potential of metaphor for the benefit of sustainable supply chain theory development, but scholars from wider fields who may also be looking to work with metaphor in their theory development efforts.

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List of Publications.

Journal Articles.

Stephens, V., Matthews, L., Cornelissen, J. P. and Rowlands, H. (2021) 'Building novel supply chain theory using 'metaphorical imagination'', *Journal of Supply Chain Management*, <https://doi.org/10.1111/jscm.12257>

Conference Papers/Presentations.

Stephens, V. (2020) 'Towards supply chains in a flourishing world. Enter, metaphor', 7th *International EurOMA Sustainable Operations and Supply Chains Forum*, Nottingham, UK, 10/02/20 - 11/02/20.

Stephens, V. (2019) 'What role for metaphor in sustainable supply chain innovation?', 6th *International EurOMA Sustainable Operations and Supply Chains Forum*, Gothenburg, Sweden, 18/03/19 – 19/03/19.

Stephens, V., Matthews, L., and Rowlands, H. (2018) 'A systematic metaphor analysis of academic discourse in sustainable supply chain scholarship: the results of a pilot study', 5th *International EurOMA Sustainable Operations and Supply Chains Forum*, Kassel, Germany, 05/03/18 - 06/03/18.

Stephens, V. and Rowlands, H. (2017) 'Proposing a metaphor perspective as a way forward for sustainable supply chain scholarship', 30th *International Business Information Management Association Conference (IBIMA)*, Madrid, Spain, 08/11/17- 09/11/17.

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This work has not previously been accepted in substance for any degree and is not concurrently submitted in candidature for any degree. The thesis is the result of my own investigations, except where otherwise stated.

Signature: VLStephens

Date: 11-July-2021

Chapter 1 – Introduction.

1.1. Setting the scene.

1.1.1. The sustainability challenge.

The COVID-19 pandemic has accounted for the largest drop in CO₂ emissions on record - a 7% reduction in 2020 compared to 2019 (Friedlingstein *et al.*, 2020; Le Quéré *et al.*, 2020). This may be seen as a glimmer of hope for the natural environment, amongst the devastating human loss. In reality, this temporary ‘win’ for the environment is unlikely to have a significant impact on global efforts to stem the current trajectory of human-induced global warming (UNEP, 2020). Despite global commitments to limiting the rise in global temperatures to well below 2°C above pre-industrial levels in line with the Paris Climate Agreement (United Nations, 2015), some reports suggest that overall global greenhouse gas emissions continue to increase, predicting a potentially catastrophic rise in global temperatures to more than 3°C this century (UNEP, 2020).

According to the influential ‘planetary boundaries’ framework (Rockstrom *et al.*, 2009) such pressures on the climate system, as well as other core biophysical systems, are fundamentally destabilising the planet (Rockstrom *et al.*, 2009; Steffen *et al.*, 2015; Lade *et al.*, 2019). A recent assessment suggests that human-induced pressures on four of the nine key biophysical systems – related to climate change, biosphere integrity, land-systems, and phosphorous and nitrogen cycles – already far exceed what are perceived to be safe limits (Steffen *et al.*, 2015). Exceeding these environmental limits risks the creation of new ecological system states which might not be able to support human life in the way that we know it (Rockstrom *et al.*, 2009).

One major lever of change concerns the contribution of the business community and, more specifically, the management of global supply chains (EEA, 2014; Thorlakson, De Zegher

and Lambin, 2018; WEF, 2021). According to a recent analysis, a small number of industries' global supply chains account for more than 50% of global greenhouse gas emissions (WEF, 2021). Additionally, as 'the engines of today's global economy' (UN Global Compact and BSR, 2015, p. 5), supply chains are estimated to account for more than 80% of global trade, and engage one in five workers, meaning that they 'play an outsized role' in the achievement of the United Nation's 2030 Agenda and its Sustainable Development Goals (Thorlakson, De Zegher and Lambin, 2018, p. 2072). In recent years, there has been a significant increase in major companies' commitments to collaborative corporate sustainability initiatives, such as the Carbon Disclosure Project's (CDP) Supply Chain Program (CDP, 2019) and the 1.5°C Supply Chain Leaders initiative (Exponential Roadmap Initiative, 2021).

Despite such apparent and unprecedented global political and business commitment, the environmental crisis is worse than it has ever been. More than three decades since the landmark *Brundtland Report* put the issue of the environment and sustainable development on the global political agenda (WCED, 1987), 2020 tied with 2016 as the warmest year on record (NASA, 2021) and ended the hottest decade on record (WMO, 2021). The COVID-19 pandemic itself is indicative of the disease risks associated with ecological disruption (IPBES, 2020; Post Carbon Institute, 2020; WWF, 2020c; UNEP, 2021) and is being experienced alongside persistently high or increasing rates of deforestation (WWF, 2020a), biodiversity loss (WWF, 2020b), human displacements from extreme weather (UNHCR, 2021), and record levels of ocean acidification (Gregor and Gruber, 2021). Influential voices have called for declaring a state of 'planetary emergency' (The Club of Rome, 2020), as the window of opportunity for stemming the crisis is closing (IPCC, 2018; UN, 2020).

Yet manifest action does not seem to be aligned with apparent sustainability commitment. Despite scientific estimations that limiting global warming to 1.5°C by 2030 requires a *reduction* in annual global fossil fuel production by 6% each year, current commitments

suggest that annual global fossil fuel production is actually set to *increase* by 2% (SEI *et al.*, 2020; UNFCCC, 2021). Similarly, recent analyses of global companies' sustainable supply chain practices suggest that their impact on the Sustainable Development Goals remains limited (Thorlakson, De Zegher and Lambin, 2018; Villena and Gioia, 2020), and only 3% of the companies registered to the CDP's supply chain programme have set supply chain emissions-reductions targets which are actually in line with the Paris Agreement goals (CDP, 2019). The UN's sober message is clear: the planet is *not on track* to meet its climate goals (UNEP, 2020, p. xiv).

1.1.2. Introducing the cognitive perspective.

In recent years, efforts to make sense of such lack of progress have turned inwards, emphasizing the links between sustainability-related behaviour and human cognition (Rees, 2010; Engler, Abson and von Wehrden, 2019). A growing body of work across a range of literatures therefore emphasizes that *how we think about* sustainability and its associated issues are a significant factor in understanding, explaining and changing *how we act* in relation to them (Andersson and Bateman, 2000; Maon, Lindgreen and Swaen, 2008; Angus-Leppan, Benn and Young, 2010; Lakoff, 2010; Shu and Bazerman, 2012; Newell *et al.*, 2014; Salamat, 2015; Anthony Swaim *et al.*, 2016; Montabon, Pagell and Wu, 2016; Lele *et al.*, 2018). This perspective challenges the predominance of exploring and explaining the (poor) state of environmental progress through theories which are based on an assumption of human 'rationality' (Lakoff, 2010; Engler, Abson and von Wehrden, 2019). It suggests that we need to *think differently* about *how we think* (Lakoff, 2010).

Contrary to the Enlightenment view of human reasoning as rational and logical, advances in cognitive and brain sciences suggest that humans actually reason unconsciously, emotionally, and through largely unconscious structures or 'frames' (Lakoff, 2010). Cognitive frames provide the means by which people make sense of often complex, ambiguous, and

challenging information. They represent ‘a mental template that individuals impose on an information environment to give it form and meaning’ (Walsh, 1995, p. 281). Such frames serve to make salient certain aspects of a perceived reality, helping to diagnose and evaluate a problem as well as prescribe a logical solution (Schon, 1979; Entman, 1993). The issue of cognitive framing has also influenced efforts to explore managerial behaviour related to sustainability (Hahn *et al.*, 2014; Hahn and Aragón-Correa, 2015) and trends in sustainability research (Lele *et al.*, 2018). Based on influential work from the field of cognitive linguistics, framing has been seen to be largely a function of *metaphor* (Lakoff and Johnson, 1980).

1.1.3. A cognitive perspective on metaphor.

For many people, metaphor is often thought of as merely a poetic device that can be used to provide language with extra rhetorical flourish. Many people might think that metaphor is something that they can get by without on a day-to-day basis (Lakoff and Johnson, 1980). However, perspectives from the field of cognitive linguistics have highlighted that metaphor is not just a matter of language. According to Lakoff and Johnson (1980b, p. 36), metaphor is ‘a way of conceiving of one thing in terms of another’. They use the terminology of ‘mappings’ to explain the connections made between different domains of knowledge and experience. This enables understanding something unfamiliar, abstract, or complex through the lens of something more familiar. Metaphor is therefore a matter of *thought*. It has been seen to be an unavoidable and central means by which humans frame and make sense of reality (Lakoff and Johnson, 1980b; Fauconnier, 1997; Lakoff and Johnson, 1999; Fauconnier and Turner, 1998; Thibodeau and Boroditsky, 2011). It is through metaphor that our experience of the world is mediated (Inns, 2002). As our thought influences our action, metaphor is therefore also a matter of action (Schon, 1979; Barrett and Cooperrider, 1990; Morgan, 1997).

This perspective has been influential in discussions of the challenges facing sustainability progress. Extending the cognitive perspective on metaphor, several authors emphasize the importance of thinking about how we frame the sustainability crisis through metaphor. This work suggests that (the challenges of) achieving sustainability is largely a function of metaphor (Romaine, 1996; Princen, 2010; Barter and Russell, 2013, Lakoff, 2010). This is because the dominant metaphoric framings of the (natural) world and our relationship with it have come to influence the ways we reason about, and therefore justify action on, sustainability. Scholars have therefore emphasised the need to expose and change those metaphors for the benefit of progress towards sustainability (Princen, 2010). This extends to the metaphors used by academics and scientists in their efforts to understand and theorize the social and natural worlds.

Given the urgency of the sustainability crisis, scholars are being called upon to play their part in the development of knowledge which can help individuals, organizations, and societies to move towards sustainability as effectively and quickly as possible (Starik and Kanashiro, 2013). According to Gladwin, Kennelly, and Krause (1995) this will require scholars to surface, question, and re-frame their tacit (metaphoric) frames. It will also require new and creative approaches to theorizing that can imagine new visions of a sustainable future (Ehrenfeld, 2008; Lozano, 2014; Shrivastava, 2014).

Over the past few decades, the topic of metaphor has therefore informed discussion of how management scholars think about, and theorize, organizations and their management. The influential work of Morgan (1980) explicitly positioned metaphor as central to the development of organizational theory. In more recent years, the dominant metaphors in organizational theory have been problematized for framing organizations in ways that are seen to be incompatible with sustainability (Barter and Russell, 2013). Scholarly efforts are therefore underway to re-imagine organizations through new metaphors (e.g., Jones, 2016;

Kemp, 2016). This is because working with metaphors has long been valued as a means to stimulate creativity and imagination within the theorizing process (Boyd, 1994; Morgan, 1997; Cornelissen, 2005; Andriessen and Boom, 2009; Foropon and McLachlin, 2013; Swedberg, 2016). New metaphors have the capability to ‘de-ossify thought’ and ‘dismantle conventional wisdom’ (Chia, 1996, p. 129) as well as ‘catalyse ideas’ and ‘propel thoughts’ forwards (Cornelissen and Durand, 2014, p. 1002). These perspectives are also attractive in light of recent calls for thinking differently about sustainable supply chains and re-imagining supply chains that are compatible with a sustainable planet (Pagell and Shevchenko, 2014a; Montabon, Pagell and Wu, 2016; Touboulic, McCarthy and Matthews, 2020; Wieland, 2021).

1.1.4. Thinking (differently) about sustainable supply chains.

Alongside rising corporate interest in supply chain management as central in an organization’s efforts to achieve its sustainability goals, the academic field of sustainable supply chain research has grown and consolidated significantly in recent decades (Seuring and Müller, 2008; Carter *et al.*, 2019). Given the importance of supply chains for achieving sustainability, sustainable supply chain management scholars have a significant role to play in addressing the sustainability crisis, particularly through the development of theory which can explain and inform the management of truly sustainable supply chains.

But recent work suggests that the field is not making sufficient contributions in this regard (Matthews *et al.*, 2016; Montabon, Pagell and Wu, 2016; Nieuwenhuis, Touboulic and Matthews, 2019). Pagell and Shevchenko (2014) suggest that the field does not currently have the knowledge to make supply chains truly sustainable. This has been partly linked with the field’s dominant logic (Markman and Krause, 2016; Matthews *et al.*, 2016; Montabon, Pagell and Wu, 2016), which has guided research and theory in terms of making supply chains *less unsustainable* instead of making supply chains *truly sustainable* (Pagell and Shevchenko, 2014). There are therefore calls for change in dominant approaches in

sustainable supply chain theory development. Recent studies have begun to respond to such calls by advocating new approaches, such as critical engaged research (Touboulic, McCarthy and Matthews, 2020) and discourse analysis (Hardy, Bhakoo and Maguire, 2020). Drawing upon the wealth of research on metaphor across the fields of cognitive linguistics and organization theory, this study also seeks to respond to those calls by exploring the role of metaphor in sustainable supply chain theory development.

1.2. Introducing the study.

1.2.1. How it is different and why this makes it valuable.

The overarching aim of the study is *to explore the role of metaphor in the development of sustainable supply chain theory*. This study is a conceptual exploration into metaphor within the context of sustainable supply chain theory development. Drawing on cognitive perspectives on metaphor, the foundational assumption of the study is that metaphor is central in the processes of developing sustainable supply chain theory. This is a novel perspective within the field of sustainable supply chain management. This study therefore represents the first to explicitly explore metaphor in the context of sustainable supply chain theory development. However, originality alone is not necessarily a virtue, and *value* for the field of supply chain management can be achieved through effectively balancing *originality* with *utility* (Corley and Gioia, 2011; Rindova, 2011).

Central to the achievement of this balance through this study has been its approach to the construction and presentation of its knowledge claims. Specifically, the study is characterized by an *exploratory* and *reflective* approach (Creswell, 2007; Agee, 2009; Flick, 2018). As a conceptual study, the researcher was immersed within the theoretical literature on metaphor. Alongside formal engagements with the community of sustainable supply chain academics, the researcher undertook authentic efforts to make sense of it, operationalize it and

recontextualize it for the sustainable supply chain field.¹ The study's approach is therefore characterized by iterative reflections on metaphor literature from the perspective of sustainable supply chain theory, and on sustainable supply chain theorizing from the perspective of metaphor theory. This has provided a novel vantage point from which to be able to 'see' and therefore address new issues for the benefit of both originality and utility in the study's core knowledge claims.

The study has been guided by three key objectives. The first is to *demonstrate the scope and relevance of metaphor for the sustainable supply chain field*. The sustainable supply chain field is at a turning point in its development. Recent work has begun to cast a critical eye over the field's ability to make meaningful contributions to the sustainability challenge. There is also increasing recognition that the unique challenges posed by sustainability means sustainable supply chain scholars need to re-think the theorization process itself. Evidence from the metaphor literature shows that metaphor has a powerful role to play in supporting such efforts, but such capabilities are largely underplayed in supply chain literature, whose limited view on metaphor is characterized by a relatively narrow frame. There is therefore a need to re-frame metaphor in order to capture and therefore leverage its true scope and relevance for supporting the current needs of the sustainable supply chain field.

The second objective is to *critically engage with the metaphoric influences on sustainable supply chain theory development*. Cognitive perspectives on metaphor support a view of the centrality of metaphor in humans' every day and scientific efforts to make sense of the world. But such metaphors can become pervasive and taken-for-granted depictions of reality, which can constrain the ability to develop new perspectives and construct new realities. Based on

¹ Recontextualization is a process of "repackaging, refining, and repositioning a discourse (or text) that circulates in a particular community for consumption within another community" (Oswick, Fleming and Hanlon, 2011, p. 323).

cognitive perspectives, it is possible to conjecture that metaphor provides some explanation for the trends and limitations observed in sustainable supply chain theory development. Critically engaging with the metaphors underpinning sustainable supply chain theory therefore serves to acknowledge their existence and limitations as a locus of change for theoretical progress in the field.

The third objective is to *harness the liberating potential of metaphor for the benefit of sustainable supply chain theory development*. Sustainable supply chain theory will require creative and imaginative approaches to research and theorizing that go beyond reporting on existing (unsustainable) practice to theorize *truly* sustainable supply chains that do not yet exist. There is widespread agreement about the powerful capabilities of new metaphors to force imaginative cognitive processes which can help to generate new perspectives and see the world anew. There is therefore a need to equip the sustainable supply chain field with the necessary metaphoric resources which will enable it to benefit from such capabilities.

A summary of the study's aim and objectives is presented in Figure 1.

Figure 1 A summary of the study's aim and objectives.

Aim:

To explore the role of metaphor within the context of sustainable supply chain theory development.

Objectives:

1. To demonstrate the scope and relevance of metaphor for the sustainable supply chain field.
2. To critically engage with the metaphoric influences on sustainable supply chain theory development.

3. To harness the liberating potential of metaphor for the benefit of sustainable supply chain theory development.

1.2.2. The presentation of the thesis.

The thesis begins by depicting work which addresses the first objective of the study. It explores the current state of theory development in the sustainable supply chain field and positions metaphor as a *relevant* consideration in addressing those challenges. It does so by explicitly framing the role of metaphor in sustainable supply chain theory development as taking ‘a metaphor perspective’. This is based on a cognitive view of metaphor which emphasizes the pervasive role of metaphor in *thought*. The frame serves to explicitly counter (other dominant) frames which view metaphor as *merely* a poetic device or figure of speech, or an optional tool for theory building. Chapter 2 provides a definition of ‘a metaphor perspective’, demonstrates its *relevance* for the particular requirements of the sustainable supply chain field, and thus establishes the frame within which the remainder of the thesis rests.

Based on the relevance of taking a metaphor perspective in sustainable supply chain theory development, the thesis then operationalizes the metaphor perspective through the development of a novel framework- the Approaches to Metaphor framework. This framework articulates a nuanced research agenda of alternative *approaches* for working with metaphor within sustainable supply chain theorizing. In so doing, it demonstrates the *scope* of metaphor for the sustainable supply chain field. The Approaches to Metaphor framework also serves to position the work depicted in subsequent chapters of the thesis as examples of approaches depicted in the framework. This work is depicted in chapter 4.

In connection with the second objective of the study, the thesis then presents work based on an approach to metaphor which emphasizes its capability to constrain sustainable supply

chain theory development. Using the method of systematic metaphor analysis and drawing on conceptual metaphor theory, it identifies and problematizes existing metaphors in sustainable supply chain theory. This work is depicted in chapter 5.

Finally, in connection with the third objective of the study, the thesis presents work based on an approach to metaphor which emphasizes its capability to liberate thinking about sustainable supply chains. First, it presents an account of the study's efforts to harness the liberating potential of metaphor by *proposing novel metaphors* for sustainable supply chains. This effort was inspired by a similar tradition in the wider literature. However, these efforts encountered critical challenges. This discussion is presented in chapter 6. While some theses might find it most appropriate to *write out* such challenges, this thesis *writes it in* because these encounters have been central to the study's ability to critique assumptions and see new 'gaps' which have led to one of the study's key contributions.

By reflecting on the challenges faced in attempting to propose novel metaphors, the thesis re-interprets how to achieve the third objective of the study. It highlights the need for harnessing the liberating potential of metaphor through the development of guidance on *how to work consciously and effectively with* metaphors for the benefit of sustainable supply chain theory development. This leads to the development of a new process-based model for metaphor-based theory development, the Metaphoric Transfer Pathways framework, which has been published within the Journal of Supply Chain Management this year (Stephens *et al.*, 2021). This work is depicted in chapter 7.

1.2.3. The value of this work.

This study's exploration into metaphor in the context of sustainable supply chain theory development is timely and important. It aligns with contemporaneous efforts to stimulate novel approaches to the development of theory for the purposes of developing truly

sustainable supply chains (Pagell and Shevchenko, 2014b; Montabon, Pagell and Wu, 2016). Given the urgency of the sustainability crisis (The Club of Rome, 2020), and the importance of supply chains in addressing that crisis (UN Global Compact and BSR, 2015; WEF, 2021), the exploration of new perspectives and new approaches to the development of supply chain theory is pressing. In addressing its research objectives, this study makes two minor and two major contributions to theory.

Firstly, the study re-frames the issue of metaphor within the (sustainable) supply chain field. Although the role of metaphor within theory development has been recognized within operations and supply chain literature (Garud and Kotha, 1994; Chen *et al.*, 2013), it has been framed in a relatively narrow way that does not fully account for the implications of the cognitive perspective on metaphor. This study therefore frames metaphor in terms of taking ‘a metaphor perspective’. Such a framing opens up a broader research agenda for working with, and benefitting from, metaphor in sustainable supply chain theory development.

Secondly, the study provides the first systematic analysis of the metaphoric landscape of the field. The analysis constructs the predominant conceptual structures (root metaphors) that underpin sustainable supply chain theory through a systematic analysis of the linguistic metaphors in use. Taking a cognitive perspective on metaphor as a conceptual process, the analysis provides additional conceptual insight into the structure of sustainable supply chain theory, complementing other analyses which have mapped the landscape in terms of topics, industry, methods, and theoretical lenses (Carter and Easton, 2011; Abbasi and Nilsson, 2012; Touboulic and Walker, 2015; Carter *et al.*, 2019).

In addition to these minor contributions, the study makes two major contributions which take the form of conceptual resources. These resources can be *used* by scholars to guide efforts to leverage the benefits of metaphor for (sustainable supply chain) theory development. Firstly,

the *Approaches to Metaphor framework* is a novel framework developed by this study. It offers a new typology of metaphor that explicitly takes into account the fact that the development of theory is achieved through different approaches, namely gap-filling and problematization (Alvesson and Sandberg, 2011). The role and capabilities of metaphors therefore differ in relation to these alternative theorization approaches. This framework helps to operationalize a broader research agenda for working with metaphor within theory development efforts than is currently recognized within the supply chain field and responds directly to recognition that the unique challenges of sustainability require sustainable supply chain scholars to re-think how theory is developed.

Secondly, the *Metaphoric Transfer Pathways framework* presents new process-based guidance for metaphor-based theory development. It addresses limitations of the guidance provided by the metaphor literature from the perspective of sustainable supply chain scholars and addresses limitations of metaphor-based theorizing within supply chain literature from the perspective of wider metaphor theory. Therefore, it is deemed to be useful to sustainable supply chain scholars working with metaphor in theory development efforts, as well as to scholars working outside of the sustainable supply chain field.

1.2.4. The structure of the thesis.

Considering the approach taken in the study, the thesis is not structured in the traditional five-chapter style which is usually structured as follows: Introduction- Literature Review- Methodology- Findings/Discussion- Conclusion.

The conceptual nature of the study means that the study predominantly draws upon material taken from the academic literature (instead of primary empirical data) to develop its key contributions. On that basis, the pertinent literature is identified and discussed throughout the study as part of the presentation and discussion of the study's core knowledge claims (rather

than in a single Literature Review chapter). The remainder of this section summarizes what and where pertinent literature is reviewed and utilised in relevant chapters throughout the thesis, before a summary of the remaining chapters concludes this chapter.

Chapter 2 provides an introduction to the streams of literature which have fundamentally informed the development of the study. This includes an introduction to conceptual metaphor theory, as a major theoretical tradition that prompted and underpins the study. It also includes key influences on the discussion of metaphor within the context of organizational theory development, and within the context of the grand challenge of sustainability.

Chapter 4 critically reflects on literature from the field of organization theory which has sought to demonstrate and typologize the different ways in which metaphor has been perceived, constructed, and used within organization theory. In so doing, it becomes possible to demonstrate the multi-faceted character of metaphor, as well as the limitations of these existing typologies for addressing the needs of the sustainable supply chain field.

To support the systematic analysis of metaphors in the sustainable supply chain field, Chapter 5 draws upon literature which has sought to empirically explore how concepts are cognitively structured through analyses of conceptual metaphors, alongside literature which has explored and problematized metaphors in organization and business contexts from a sustainability perspective.

To make sense of the challenges of proposing new metaphors in this study, Chapter 6 draws upon a stream of literature which has criticized and challenged dominant approaches to metaphor in organization theory. This literature is used to problematize the logic behind a common scholarly project of *proposing new metaphors*.

Finally, chapter 7 critically reflects upon a stream of literature which has sought to provide methodological guidance for metaphor-based theory development, both within the supply

chain field, and in wider metaphor literature. This provides the conceptual raw material in developing a new process model for guiding sustainable supply chain scholars in metaphor-based theory development.

To conclude this section and the chapter, a summary of the remaining chapters is presented. Chapter 2 introduces the foundational literature to demonstrate the relevance of metaphor for sustainable supply chain field and to construct the perspective on metaphor that frames this thesis. Chapter 3 discusses the study's key methodological considerations, including its constructionist assumptions and exploratory, conceptual research design, and defines the quality criteria by which the study should be assessed. Chapter 4 discusses the need for a new typology of metaphor which can accommodate the specific needs of sustainable supply chain theorizing and develops the Approaches to Metaphor framework. Chapter 5 demonstrates the use of the systematic metaphor analysis procedure to construct the metaphoric landscape of sustainable supply chain theory and uses conceptual metaphor theory as a lens to deduce insights into the potential role of metaphors in constraining sustainable supply chain theory development. Chapter 6 reflects upon the challenges of the study's efforts to propose new metaphors and re-interprets how the study's third objective should be achieved. Chapter 7 discusses the limitations of existing guidance for working with metaphors in theory development and develops the Metaphoric Transfer Pathways framework. Finally, chapter 8 articulates the study's key contributions, limitations, and opportunities for future research.

Chapter 2 – Establishing the relevance of metaphor for the sustainable supply chain

field: an introduction to the literature.

2.1. Introduction.

This chapter has two aims. The first is to provide a conceptual background for the study. As has been mentioned in the Introduction chapter, the thesis draws upon pertinent literature at relevant stages throughout the work. This chapter therefore provides an initial introduction to the literatures on metaphor which have informed the foundations of the study. This includes an introduction to the conceptual theory of metaphor, which is the major theoretical tradition that has underpinned the work. It also includes discussion of how metaphor has been discussed in the context of theory development, with a specific focus on introducing the literature from organization theory which has a rich tradition of research on metaphor, as well as consideration of how metaphor has been discussed in the context of addressing the grand challenge of sustainability.

The second aim of this chapter is to demonstrate the relevance of metaphor for the sustainable supply chain field. In so doing, this chapter partly contributes to the achievement of the study's first objective which is to *demonstrate the scope and relevance of metaphor for the sustainable supply chain field*. The relevance of metaphor for the sustainable supply chain field is stated in terms of two broad issues. The first issue is the need for *change* in how we think about, and therefore enact, sustainable supply chains through research, theory, and practice, and that metaphor is central to that change. Specifically, the chapter explores recent critical commentaries on the current state of sustainable supply chain theory development and positions metaphor as an important complement to other scholars' suggestions for how sustainable supply chain theory can be better developed. The second issue is that the existing literature on metaphor in operations and supply chain literature is limited in its ability to

address the needs for change in sustainable supply chain theory development. This chapter therefore formally articulates the relevance of metaphor by framing metaphor in the sustainable supply chain field in terms of taking ‘a metaphor perspective’.

The remainder of the chapter is organized as follows. Section 2.2. explores the current state of theory development in the sustainable supply chain field. To do so, it addresses the issue of theory and theory development generally and introduces the literature which has highlighted the limitations of the sustainable supply chain theory to date. This allows for introducing metaphor as a new and relevant response to those limitations. Section 2.3. then introduces relevant literature on metaphor, including how metaphor has been discussed in relation to the development of academic knowledge, its theoretical grounding in the field of cognitive science, and its place in relation to the grand challenge of sustainability. Considering these literatures, Section 2.4. reflects on the limitations of existing thinking about metaphor in the supply chain field. Section 2.5. then demonstrates the objectives that have emerged from these literatures. In partial achievement of the study’s first objective, section 2.6. articulates a specific frame for thinking about metaphor in the sustainable supply chain field and illustrates the relevance of that frame for meeting the needs of the sustainable supply chain field. Finally, section 2.7. concludes the chapter.

2.2. The current state of sustainable supply chain theory development.

2.2.1. Defining what is meant by theory and theory development.

As the study is rooted in the context of theory development, it is relevant to begin by considering what is meant by ‘theory’ as it is used in this thesis. There is a degree of consensus about the importance of theory and its centrality to academic endeavor (Colquitt and Zapata-Phelan, 2007). In the academic world, theory has been described as core to scholarship because it is the ‘currency’ by which academics trade (Cornelissen, Höllerer and Seidl, 2021, p. 2). It has also been described as the ‘cornerstone’ of academic knowledge

because it ‘differentiates science from common sense’ (Handfield and Melnyk, 1998, pp. 321–322). More fundamentally, the development of theory has been described as the basic aim of science (Kerlinger and Lee, 2000).

Several well-known and well-cited definitions of theory are available. For example, Kerlinger (1986, p. 9) defines theory as ‘a set of inter-related constructs (concepts), definitions and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting phenomena’. Bacharach (1989, p. 496) defines theory as ‘a statement of relations among concepts within a set of boundary assumptions and constraints. It is no more than a linguistic device used to organize a complex empirical world’. More recently, Corley and Gioia (2011, p. 11) have defined theory as ‘a statement of concepts and their interrelationships that shows how and/or why a phenomenon occurs’.

However, there are many different conceptualizations of theory, what it should do and therefore what makes it *good*, and how it should be developed (Colquitt and Zapata-Phelan, 2007b; Carter, 2011). Despite (or perhaps because of) the quantity of well-cited works on the meaning of ‘theory’ (Weick, 1989a, 1995; Sutton and Staw, 1995; Colquitt and Zapata-Phelan, 2007), calls for clarity are still being heard (Cornelissen, Höllerer and Seidl, 2021; Sandberg and Alvesson, 2021). Sandberg and Alvesson (2021, p. 488) recently suggested that ‘expressions such as ‘theory development’, ‘theory building’, ‘theory evaluation’ and ‘theoretical contribution’ are frequently used in research texts and journal guidelines as if the meaning of ‘theory’ is obvious to researchers. This, however, is not the case.’ Notably, recent work has also problematized dominant conceptualizations of theory as conceptual knowledge which aims to *explain* phenomena and has called for a more inclusive conceptualization of theory which acknowledges other styles of theorizing (Sandberg and Alvesson, 2021).

The perspective on ‘theory’ that is taken in this thesis is inspired by three key perspectives. First, is the definition of theory offered by Bacharach (1989, p. 496), which was described earlier in this section. This definition is useful for its emphasis on the assumptions that inform and constrain the development of theory. Second, is an emphasis on theorizing as a process, rather than theory as an end product (Weick, 1995; Swedberg, 2016; Cornelissen, Höllerer and Seidl, 2021). This perspective recognizes theory as more than just full-blown theories (Weick, 1995). Weick (1995, p. 386) acknowledges theory as the ‘interim struggles’ that precede the ‘ultimate triumph’ of a ‘grand theory’. Third, is a perspective which suggests that theory should be evaluated in terms of the extent to which it challenges rather than affirms assumptions in a field (Davis, 1971). Davis (1971) refers to this as *interestingness*. Weick (1989, p.517) refers to a similar perspective on evaluating theory in terms of the extent to which it is ‘interesting rather than obvious, irrelevant or absurd, obvious in novel ways, a source of unexpected connections, high in narrative quality, (and) aesthetically pleasing’. Together, these perspectives emphasize *assumptions*, *interim struggles* and *interestingness* which infuse the perspective on theory that is taken in this thesis. As will be demonstrated, these are deemed to be particularly salient perspectives for understanding and guiding efforts in theorizing the grand challenge of sustainability from a metaphor perspective.

This section has provided a general introduction to the meaning of ‘theory’ to contextualize the use of the term within this thesis. Section 2.2.2. explores how theory is discussed within the sustainable supply chain field.

2.2.2. Discussion of ‘theory’ in the sustainable supply chain field.

Within the sustainable supply chain field, the discussion of theory can be characterized by two core issues. The first relates to the use (or lack thereof) of theory to make sense of sustainable supply chain phenomena. Specifically, this refers to the adoption and application of established ‘grand’ theories which have been borrowed from other knowledge domains,

such as economics (e.g., transaction cost economics), management (e.g., resource-based view) as well as psychology and sociology (e.g., social network analysis) (Carter, Rogers and Choi, 2015). The second relates to the development of in-house or indigenous theory built within the supply chain field (e.g., Carter, Rogers and Choi, 2015).

In general, the supply chain field, and subsequently the sustainable supply chain field, has predominantly engaged with theory from the former perspective. The use of established theory can be considered prudent because it is an efficient means of identifying a robust framework for analysis (Wacker, 1998). It can also help scholars to formulate rigorous studies and can help to develop a more systematic set of findings across a series of studies (Carter, 2011). Despite, or perhaps because of, the sustainable supply chain field's roots in the traditionally practice-oriented fields of Operations Management and Supply Chain Management, there is an acceptance that there is nothing so practical as good theory (Lewin, 1943; Van de Ven, 1989).

On that basis, some scholars have criticized the sustainable supply chain field's relative theoretical dearth, highlighting that many sustainable supply chain studies do not apply any theoretical lens (Carter and Easton, 2011). Such studies have been referred to as 'reporters,' which are studies which present low levels of either theory testing or theory building (Colquitt and Zapata-Phelan, 2007a; Touboulic and Walker, 2015). Some positive trends in the use of established theory to explore and explain sustainable supply chain phenomena have therefore been welcomed (Carter and Easton, 2011; Touboulic and Walker, 2015; Carter *et al.*, 2019). Some studies have also shown that wider organization theory provides a potentially rich field of theories for the study of sustainable supply chain phenomena (Sarkis, Zhu and Lai, 2011; Moxham and Kauppi, 2014; Touboulic and Walker, 2015). This aligns with similar efforts to develop 'toolboxes' of organization theory which can be applied by

supply chain scholars to supply chain research more widely (Ketchen and Hult, 2007; Shook *et al.*, 2009; Wowak *et al.*, 2016).

Touboulic and Walker (2015) note that where theory has been used in the sustainable supply chain field, it has been with an emphasis on *testing* theory within the sustainable supply chain management context, rather than extending or *building* new theory of sustainable supply chain (Colquitt and Zapata-Phelan, 2007). An emphasis on theory testing has been explained in terms of the fact that the supply chain field is relatively young in comparison with associated disciplines of management, economics and marketing (Carter, 2011). There may, however, be two key limitations to this approach.

The first relates to the issue of the field's inability to establish its own theoretical base (Carter, 2011) which is seen as a marker of disciplinary maturity (Harland *et al.*, 2006). Several scholars have therefore called for the development of theory from within the supply chain management discipline instead of relying on borrowed theories (Cousins, Lawson and Squire, 2006; Carter, 2011; Fawcett and Waller, 2011). This can reverse the net inflow of theory and enable the field to contribute theory to other fields.

The second relates to whether extant organization theory, which has been established in a 'non-sustainable' context, is (still) appropriate for the development of sustainable supply chain knowledge (e.g., Pagell, Wu and Wasserman, 2010). An illuminating study by Pagell, Wu and Wasserman (2010) illustrated how key theoretical lenses could not sufficiently explain unexpected supply chain behaviour among sustainable organizations. Moreover, despite the rich array of theory available, the field has tended to rely heavily on a small number of key theoretical lenses, such as Transaction Cost Economics (TCE) and the Resource Based View (RBV), which have at their core concerns about efficiency and cost-minimization (TCE) and competitive advantage (RBV).

The influence of such theoretical lenses on the development of the sustainable supply chain field has therefore been noted. According to Touboulic and Walker (2016), the dominance of these lenses has constrained conceptualizations of sustainable supply chains in terms of resources, performance, and power (Touboulic and Walker, 2016). The dominance of these theoretical lenses may also be correlated with criticisms that the field has predominantly been built upon an ‘instrumental logic’ (Pagell and Shevchenko, 2014a; Markman and Krause, 2016; Montabon, Pagell and Wu, 2016).

According to Montabon, Pagell and Wu (2016, p. 13), ‘logic’ refers to ‘the framework(s) that guide research and practice’. These are often ‘preconscious and complex combinations of problem-solving routines and cognitive elements, such as assumptions and decision making rubrics’ (Montabon, Pagell and Wu, 2016, p. 13). The instrumental logic has been characterized as a perspective on business and supply chain management which treats social and environmental issues ‘as if they were emerging distractions’ (Gao and Bansal, 2013, p. 241). It assumes that the *goal* of sustainable supply chain management is the economic performance of the firm, which is most often manifested as profits (Montabon, Pagell and Wu, 2016).

Built on such a logic, the sustainable supply chain field has been characterized by research concerns related to *how firms can benefit from* addressing social and environmental issues (Gao and Bansal, 2013) and whether or not it ‘pays’ for firms to address environmental and social supply chain issues (e.g., Markley and Davis, 2007; Golicic and Smith, 2013). Thus, social, and environmental issues in supply chains have often been cast as sources of potential supply chain disruption and corporate risk and crises (Carter and Rogers, 2008), with sustainable supply chain management a necessary solution. For example, recent work has explored the role of the media’s response to organizational crises as an antecedent to sustainable supply chain management practices (Hartmann, 2020).

The instrumental logic is embedded within the influential conceptual framework of sustainable supply chain management by Carter and Rogers (2008). Their framework explicitly adopted Elkington's (1998) triple bottom line (TBL) perspective and sought to offer a more integrated framework of sustainability issues within the supply chain management context. Ostensibly, their framework suggests that *true* sustainability in the context of supply chain management exists at the intersection of the social, environmental, and economic dimensions of the triple bottom line. The authors suggest that examples of such sustainable supply chain activities include improved working conditions which leads to increased employee motivation which in turn leads to reduced absenteeism and increased productivity among supply chain personnel.

Building on Carroll's (1979, p.500) perspective of corporate social responsibility which places economic responsibility as the 'first and foremost social responsibility of business', Carter and Rogers (2008) specifically criticized previous supply chain research on sustainability which had failed to explicitly account for a firm's economic responsibility. Their conceptual framework thus specifically directs organizations to identify supply chain activities which 'not only positively affect the natural environment and society, but which also result in long-term economic benefits and competitive advantage for the firm' (Carter and Rogers, 2008, p.365). In fact, the authors seem to question any activity which is beneficial for social and environmental performance, but which does not lead to any positive economic results for the firm.

The suggestion that sustainability can be a 'win-win' issue for corporations is widespread and comforting within mainstream corporate discourse (Walker and Jones, 2012). The notion that managing the environmental and social performance of a supply chain is not at odds with a firm's traditional economic goals has been considered an important driver in the acceptance and continued pursuit of sustainable supply chain management research and practice (Walker

and Jones, 2012). Golicic and Smith's (2013) meta-analysis of 20 years of empirical research on environmental supply chain practices suggests that the 'business case' for the introduction of supply chain sustainability practices is clear.

However, more recent work in the field suggests that this logic inappropriately frames sustainability in economic rather than ecological terms. It leads to the development of theoretical and practical knowledge which might make a supply chain *less unsustainable*, but not *truly sustainable*. According to Pagell and Shevchenko (2014b, p. 83) *true* supply chain sustainability means 'at worst [doing] no net harm to natural or social systems while still producing a profit over an extended period of time; a truly sustainable supply chain could, customers willing, continue to do business forever'. This definition is built upon an ecologically dominant logic which, contrary to the instrumental logic, places the natural environment at the heart of sustainable supply chain research. From this perspective, the goal of sustainable supply chain management in theory and practice is not corporate profits but ecological sustainability (Montabon, Pagell and Wu, 2016).

Putting the environment at the heart of sustainable supply chain research and theorizing means recognizing the natural environment as the primary constraint upon socio-economic activities (Griggs, 2013; Markman and Krause, 2016). It means satisfying the needs of environmental and social stakeholders *before* traditional economic stakeholders in supply chain decisions (Montabon, Pagell and Wu, 2016). This marks a radical departure from the dominant logic of supply chain management scholarship which has been deemed necessary for the development of knowledge about how supply chains can be managed to do 'no net harm' to the natural environment.

However, a key question from this perspective still relates to *what* doing 'no net harm' really means for social and ecological systems, and what is necessary to achieve it. Despite the

apparent coherence implied in the Brundtland definition (WCED, 1987), and TBL conceptualization (Elkington, 1997), sustainability has also been described as an *essentially contested concept* (Connelly, 2007; Ehrenfeld, 2008; Thompson, 2011). This means that it is a concept which is ‘persistently vague’ and subject to ‘endless disputes’ (Gallie, 1956, p. 172). As Ehrenfeld (2008, p. 215) states, it means that while there may be some common agreement about the desired end-goal of sustainability, there is much less agreement about how it should be achieved. According to Matthews *et al.* (2016), recognizing sustainability as an ‘essentially contested concept’ is vital for the development of sustainable supply chain theory. The next section therefore introduces some of the key debates related to what sustainability means, and how it should be achieved.

2.2.3. Recognizing wider debates on sustainability.

Sustainability has been described as ‘the greatest challenge facing the human race’ (Gladwin, Kennelly and Krause, 1995, p. 900). At the same time, it has been seen as ‘problematical’ because ‘people – virtuous and thoughtful people – have different and mutually irreconcilable ideas of just what is sustainable and what is not’ (Thompson, 2011, p. 2). Competing ideas about sustainability have been seen to be rooted in competing normative views on issues which influence reasoning about sustainability (Lele, 2013). These normative views relate to, for example, the ontological status of nature and humanity’s relationship with the natural world (Mebratu, 1998; Banerjee, 2003), the criticality of natural resources to human survival and development (Costanza and Daly, 1992), the (im)possibility of perpetual economic growth (Jackson, 2009), and the potential for technological innovation to decouple economic goals from environmental constraints (Beckerman, 1974; Nordhaus, 1973; Huesemann and Huesemann, 2011).

For example, alternative assumptions on the criticality of natural resources to human development underpin debates between ‘weak’ and ‘strong’ sustainability theorists. Weak

and strong sustainability refer to perspectives which differ in their assumptions about whether natural capital can be satisfactorily substituted by man-made capital (Ang and van Passel, 2012). Weak sustainability assumes that the preservation of natural capital is *not* critical to the sustainability of the human economy because natural capital offers no unique services (Solow, 1974). A key concern of weak sustainability theorists therefore relates to the assurance of the total available stock for future generations, no matter what the total composition of that stock. Solow (1974, p. 41) suggests that ‘earlier generations are entitled to draw down the pool ...as long as they add ... to the stock of reproducible capital.’

By contrast, strong sustainability theorists emphasize the complexity and breadth of ecosystem services provided by the natural environment which are not substitutable by man-made capital and are in fact essential for life as we know it (Costanza and Daly, 1992). According to Daly (1996) man-made capital fundamentally relies upon natural capital for its existence. Strong sustainability theorists emphasize that the value of a forest, for example, relates not simply to the number of trees it contains for the supply of timber, but also for its regulation of water (in the atmosphere, water table, soils, and surface waters), its regulation of greenhouse gases such as carbon dioxide and methane, as well as its support for the health of local flora and fauna.

Thus, from a strong sustainability perspective, Daly (1990) proposed three key precepts for the preservation of critical natural capital: limit use of all resources to rates that ultimately result in levels of waste that can be absorbed by the ecosystem, exploit renewable resources at rates that do not exceed the ability of the ecosystem to regenerate the resources, and deplete non-renewable resources at rates that, as far as possible, do not exceed the rate of development of renewable substitutes.

These alternative perspectives on sustainability can be linked to alternative perspectives on the highly debated issue of economic growth, where *growth* is defined as increases in material and energy throughput. The prevailing wisdom of neo-classical economics suggests that economic growth leads to human prosperity. It is suggested that higher incomes lead to increased choices, and improved quality of lives. As Gross Domestic Product (GDP) measures the busyness of economic activity, increasing GDP per capita has been seen as a proxy for increasing prosperity. It has therefore been one of the most important policy goals of the last century (Jackson, 2009).

However, recent decades of unbridled economic growth and global industrialisation has caused some scholars to fundamentally question the prevailing assumptions of neo-classical economics. A new field of *ecological economics* has grown to counter its pre-dominant and prevailing assumptions. Ecological economics differs from neo-classical accounts in that it is based on a pre-analytic vision of a full (rather than empty) world. It also recognises the human economy as a subset of a finite ecological system (Daly and Farley, 2010; Daly, 2015).

Greater recognition of the dependency of the socio-economic system on the ecological system means that another central theme of debates related to economic growth and sustainability is the issue of dematerializing the economy through decoupling economic growth (increasing per capita income) from increasing material usage (UNEP, 2011). This means that, in theory, the economy can continue to grow without corresponding impacts on natural resource usage (OECD, 2002). For some, the scale of decoupling required is associated with ‘factor 4’ enhances in resource productivity, which means that current levels of output are maintained while using only a quarter of the resources usually required (Weizsacker, Lovins and Lovins, 1998). For others, the scale of decoupling required is factor

10, which means enhancing productivity to the extent of using only a tenth of the resources currently required (Schmidt-Bleek, 2008).

Jackson (2009) questions whether such an extent of decoupling is truly possible, either in terms of technological capabilities or in terms of the speed with which such capabilities need to become operational. He also suggests that while some advancements have been made regarding reducing the ecological intensity of production activity, these reflect *relative* rather than *absolute* decoupling. He suggests that although the intensity of CO₂ emissions per economic output has reduced over time, increases in the global population size has meant that the absolute quantity of emissions of CO₂ has actually increased. While Jackson (2009) concedes that a major technological breakthrough is always a possibility, he is not optimistic that sustainability can be achieved with anything less than fundamental transformation of the socio-economic and cultural structures that currently characterise the industrialised North, and which threaten to dictate the meaning of ‘development’ in the developing South.

Therefore, scholars have also framed the issue of sustainability in terms of the qualitative meaning of human ‘development’. Scholars have attempted to extrapolate the concept of human development from the concept of economic growth on the assumption that human development is neither synonymous with nor dependent upon it (Banerjee, 2003; Redclift, 2007; Barkemeyer *et al.*, 2014). Although conventional wisdom holds that growth leads to prosperity because increased GDP per capita reflects higher incomes, greater consumer choice, and greater economic freedom as a source of happiness (Arndt, 1981; Barbier, 1987; Costanza and Daly, 1992), some evidence suggests that, beyond a certain level of GDP, there is actually an inverse relationship between GDP and human happiness (Easterlin, 1974, 1995). This has been known as the ‘Easterlin Paradox’. Materialistic values of popularity, image, and financial success have been seen as psychologically opposed to intrinsic values

such as self-acceptance and a sense of belonging in the community (Jackson 2009) which are, according to Jackson (2009), fundamental constituents of human *flourishing*.

Ehrenfeld (2008) similarly draws upon the concept of *flourishing* to re-vision sustainability as ‘the possibility that human and other life will flourish on the planet forever’ (Ehrenfeld, 2008). In so doing, he re-frames the sustainability focus in human terms to position human wellbeing as central to the meaning of a sustainable planet. From this perspective, Ehrenfeld (2008) warns against societal efforts to merely change *how* we do what we do in light of the planetary limits, without questioning *what* we are doing and *why*. He therefore suggests that even if dematerializing the economy by a factor of 10 was possible, it simply addresses the *means* not the *ends* of economic systems that support human life (Ehrenfeld, 2008).

This section has demonstrated the existence of wider debates on the meaning of sustainability and how it should be achieved. This is relevant because recognition of these wider debates serves as a reminder that sustainability is a grand societal challenge (George *et al.*, 2016), and *not just* another supply chain management issue (Matthews *et al.*, 2016). In so doing, it helps to critically reflect on how sustainability has predominantly been framed in the sustainable supply chain field – largely, as a source of competitive advantage for a firm (Markley and Davis, 2007). In recent years, greater recognition of wider sustainability debates has led some supply chain scholars to call for new approaches to sustainable supply chain research in order that the field can better contribute knowledge to the development of socio-ecological sustainability.

2.2.4. New perspectives on developing theory within sustainable supply chain.

As a ‘principal means through which manufactured capital displaces natural capital’ (Matthews *et al.*, 2016, p. 83), supply chains are seen as an important ‘locus of change’ for achieving the sustainability of the broader ecosystem (Mohrman and Worley, 2010, p. 291).

The sustainable supply chain field is therefore an important contributor to wider discussions about the achievement of sustainability. However, to date, the field has not significantly contributed to wider discussions (Hoffman and Georg, 2012; Matthews *et al.*, 2016). Although numerous robust reviews have helped to summarize, consolidate, and demonstrate the significant progress of knowledge in the field (Seuring and Müller, 2008; Carter and Easton, 2011; Carter *et al.*, 2019), such knowledge has been described as developing in ‘splendid isolation’ from the advancing literature on sustainability (Nieuwenhuis, Touboulic and Matthews, 2019, p. 13). The field has been described as largely looking inwards instead of engaging with wider debates on sustainability (Matthews, 2016). A resulting characteristic of the field has been a research concern with how sustainable supply chains are the same as, rather than different to, ‘conventional’ supply chains (Pagell and Shevchenko, 2014). Pagell and Shevchenko (2014) therefore suggest that the field needs to stop thinking of itself as a sub-stream of supply chain management research.

For Pagell and Shevchenko (2014) the issues largely lie around the prevailing assumptions about the *purpose* of supply chain management, and about what makes *rigorous* supply chain research. From a methodological perspective, they suggest that while the primacy of empirical research has been significant in the development of the supply chain field, it ultimately limits sustainable supply chain scholars to *reporting* on firms’ sustainable supply chain activities, rather than driving change towards supply chain sustainability. Similarly, they suggest that predominant methodological approaches, such as large-scale surveys which are designed to understand the *average* case, are inadequate for researching supply chain behaviour that is *different* from current (unsustainable) norms.

From a theoretical perspective, Pagell and Shevchenko (2014) also emphasise the need to challenge the prevailing assumption that *shareholders* and *managers* are the most important supply chain stakeholders, and that *profits* are the primary gauge of supply chain success. For

Montabon *et al.* (2016) such instrumentalism can be challenged by explicitly shifting norms and values around supply chain management towards an ecologically dominant logic, which suggests that supply chain management decisions should serve to satisfy environmental and social stakeholders first, *before* customers, managers, or shareholders.

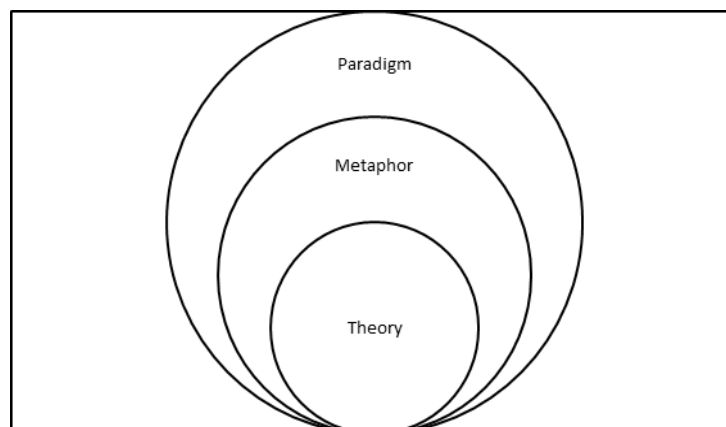
In a similar vein, Matthews *et al.* (2016) characterizes the limitations of the sustainable supply chain field in terms of the predominance of assumptions associated with weak sustainability. As has been mentioned, weak sustainability takes a softer view on the criticality and non-substitutability of natural capital. From a management perspective, weak sustainability has been articulated as a perspective on sustainability which seeks to integrate the management of environmental concerns within existing structures and systems in business, instead of challenging and transforming them (Roome, 2012).

Matthews *et al.* (2016) do not promote a single alternative paradigm as a preferred alternative, as Montabon, Pagell and Wu (2016) do, but rather call for a commitment to theorizing sustainable supply chains from a range of alternative paradigms. The authors articulate four paradigms in their 'Sustainability Paradigms Framework', each of which is characterized by differing assumptions related to the scale and scope of the sustainability problem (weak versus strong sustainability) and the nature of change (structure versus agency). The authors suggest that this can help supply chain scholars to think beyond the assumptions of weak sustainability and guide research to explore supply chain phenomena from a greater range of alternative and potentially competing sustainability paradigms. This perspective therefore embraces the uncertainty around how a sustainable socio-ecological order is achieved and therefore reduces the risk that the sustainable supply chain field assumes *a priori* the perspective of weak sustainability, either in terms of its view on the criticality of natural capital or the level of supply chain transformation required.

Such critiques of the state of sustainable supply chain theory development represent an incipient critical discussion on the future of sustainable supply chain field (Nieuwenhuis, Touboulic and Matthews, 2019). Nonetheless they represent influential calls for thinking differently about sustainability in supply chain management research. These critiques predominantly proceed from paradigmatic (Montabon, Pagell and Wu, 2016), theoretical (Pagell and Shevchenko, 2014a; Touboulic and Walker, 2015), and methodological perspectives (Pagell and Shevchenko, 2014). In line with Morgan's (1980) characterization, these dimensions of theory development may be seen as the field's predominant 'puzzle-solving' approaches and 'paradigmatic' assumptions.

However, Morgan (1980) suggests that another major dimension of theory development is metaphor. Morgan's (1980) view is that *metaphor* mediates the connection between theoretical explanations and broader paradigmatic assumptions (Figure 2).

Figure 2 Relationships between paradigms, metaphor, and theory. Adapted from Morgan (1980).



Building on cognitive perspectives, numerous other scholars have similarly highlighted the centrality of metaphor within the development of theory (e.g., Bacharach, 1989; Weick, 1989b; Cornelissen, 2006; Boxenbaum and Rouleau, 2011). There is now a rich body of work on metaphor in the field of scientific theory (Boyd, 1994; Kuhn, 1994; Ortony, 1994; Soyland, 1994; Gould, 1997; Brown, 2008; Gibbs Jr., 2008) including organization theory

specifically (Morgan, 1980; Grant and Oswick, 1996b; Cornelissen, 2005; Boxenbaum and Rouleau, 2011; Oswick, Fleming and Hanlon, 2011; Ketokivi, Mantere and Cornelissen, 2017; Ortenblad, Trehan and Putnam, 2017).

Therefore, in line with Morgan (1980), and in light of the calls for change in theorizing supply chain sustainability, metaphor may be positioned as a relevant dimension for achieving change and progress in sustainable supply chain theory development. Although it has been shown that there is a rich history of using metaphors within the supply chain field (Foropon and McLachlin, 2013), explicit consideration of metaphor in supply chain theory is limited (the only known papers include, Garud and Kotha, 1994; Ramsay and Caldwell, 2004; Chen *et al.*, 2013; Foropon and McLachlin, 2013). It is also, to the author's knowledge, absent from discussions of sustainable supply chains.

Section 2.3. therefore, introduces the dominant thinking on metaphor in scientific theorizing, its theoretical grounding in cognitive science, and its place within discussions of the grand challenge of sustainability. Together, these inform the argument for thinking seriously about metaphor in sustainable supply chain theory development.

2.3. An introduction to metaphor.

2.3.1. Metaphors – liberating and constraining in theory development.

Among several authors whose work on theory has been mentioned in section 2.2.1, metaphor has been recognized for its role in the development of theory (Bacharach, 1989; Weick, 1989). Bacharach (1989, p. 497) specifically discusses metaphors within the context of developing theory, suggesting that metaphors can act as 'a useful heuristic device' for theorists. Although his specific purpose is to clarify that metaphors *do not equate to theory*, he nonetheless suggests that the imagery contained in a metaphor might assist the theorist in developing specific propositions or hypotheses about the phenomenon under study

(Bacharach, 1989). Metaphor has therefore been depicted as a useful heuristic device, and a specific *tool* for *creativity* and imagination in theory development (Weick, 1989b; Shoemaker, Tankard Jr. and Lasorsa, 2004; Swedberg, 2016, 2020)

In contrast, Weick's (1989) perspective alludes more strongly to the inevitability of metaphoric representations in theorists' efforts to make sense of complex organizational phenomena. In developing theory about the empirical world, scholars have recognized that 'the world does not come to us in 'raw form' but is actively constructed by us, often using prefabricated vocabularies or schemas for interpretation' (Alvesson and Kärreman, 2007; Cornelissen and Kafouros, 2008b, p. 972). These interpretive schemas equate to metaphors, as organizational researchers construct their own approximations of the subject under study. Theorists then come to rely upon these as a source of language and ideas which help them to make sense of, represent and discuss otherwise complex and abstract phenomena (Weick, 1989b; Cornelissen, 2006b). This can be helpful (Bacharach, 1989) but it also suggests that those representations can embody and perpetuate particular assumptions, which as Bacharach (1989) recognized, can act as fundamental constraints on the theory development process. The implication is that metaphors may be seen as both liberating and constraining.

A number of scholars have suggested that the work of Morgan (1980, 1983, 1997) has been influential in popularizing the paradoxical view of metaphors as simultaneously liberating and constraining in the development of organization theory (Mangham, 1996; Jermier and Forbes, 2011; Cornelissen, 2017). Morgan (1980) initially proposed that limitations in organizational theory could be *explained by* the functioning of metaphor. Morgan (1997) suggests that all theory of organization and management is based on underlying metaphoric images.

More recently, Ketokivi, Mantere and Cornelissen (2017) similarly demonstrated how influential theories of organization are based on particular analogical representations of organization.² For example, the authors articulate the metaphoric conceptualization of the *organization as a governance structure* as being at the heart of transaction cost economics, the *organization as a bundle of productive resources* as being at the heart of the resource-based view, and the *organization as an evolving organism* as being at the heart of theory of organizational evolution. They argue that by applying these theories, scholars implicitly accept and reason through such metaphors in order to develop their theoretical arguments.

Morgan (1980) highlighted that the metaphors of machine and organism are dominant conceptualizations of organizations that have become taken for granted within organization theory. More recent analyses have similarly suggested the prevailing dominance of these two metaphoric conceptualizations (Cornelissen, Kafouros and Lock, 2005; Barter and Russell, 2013). In line with these metaphors, organizational scholars often conceptualize and communicate about organizations in terms of pursuing organizational *efficiency* through the alignment of *systems* and *measurement of performance* (reflecting the machine metaphor) or the pursuit of organizational *growth* or an organizational capability for *learning* (reflecting the organism metaphor) (Morgan, 1997; Cornelissen, Kafouros and Lock, 2005). Morgan (1997) argues that as metaphors often go unasserted, unrecognized and taken for granted, they can trap theorists into partial ways of theorizing organizations. He therefore suggested that organizational scholars need to become more aware of the metaphors they use and the part that they play in the social construction of scientific knowledge (Morgan, 1980).

² Although distinctions have been drawn between analogy and metaphor, the two are often used synonymously or with little distinction within organization theory (Cornelissen and Durand, 2014). Or, analogy has been considered as a part of metaphor (Chen *et al.*, 2013). Following this tradition, this thesis uses the term metaphor.

Paralleling his view on the constraining nature of metaphoric representations of organizations, he simultaneously advocated for conceptualizing and theorizing organizations through a range of novel and competing metaphorical images (Morgan, 1997). Recognizing all metaphors as fundamentally partial, there is a need for multiple metaphors to be able to capture the rich complexity of organizational phenomena (Cornelissen, 2017).

A stream of literature has thus embraced the positive status of metaphor within organization theory and has framed metaphor in terms of its generative potential for knowledge development (Schon, 1979), particularly in the early stages of theory building (Bacharach, 1989; Weick, 1989). This perspective emphasizes that metaphors are capable of liberating and generating whole new perspectives on organizational reality that were previously unseen (Cornelissen, 2005) by helping us to come to see things in new ways (Schon, 1979).

This perspective has been largely influenced by constructionist perspectives which emphasize metaphor's potential for *creating* new perspectives. Based on the view that the way in which we think about reality affects how we act in relation to it (Schon, 1979; Lakoff and Johnson, 1980b), metaphor is seen to actively encourage different ways of thinking and in so doing helps to generate alternate social realities (Tsoukas, 1993). Metaphor is therefore seen as 'liberating' (Grant and Osrick, 1996a, p. 3), and reminds us that what we perceive as social reality is not incontrovertible (Grant and Osrick, 1996a).

A major theoretical tradition that underpins organizational scholars' perspectives on metaphor hails from the field of cognitive linguistics. The next section therefore discusses the theory of conceptual metaphor (Lakoff and Johnson, 1980a, 1980b, 1999) which has been influential in theoretically elevating metaphor from a mere linguistic device to a cognitive device that fundamentally connects conceptualization and language (Fauconnier and Turner, 1998).

2.3.2. A conceptual view of metaphor.

For many centuries, linguists and philosophers held the view that metaphor is merely an ‘anomaly’ of language (Schon, 1979, p. 254). Metaphors such as Shakespeare’s ‘*All the world’s a stage, and all the men and women merely players*’ (Shakespeare, 2013, p. 59) and ‘*Advertising is the rattling of a stick inside a swill bucket*’ (Orwell, 2000, p. 55) are classic examples of how metaphors can act as powerful poetic tools which serve to ‘generate a gestalt, emotive and holistic impression’ about a subject (Inns, 2002, p. 307). The first general theory of metaphor provided by Aristotle (1991) therefore cast metaphor as a figure of speech or poetic expression that exists *alongside* literal language.

This view of metaphor was long taken for granted (Lakoff, 1993). It has been termed a ‘substitution view’ of metaphor which assumes that every metaphorical statement is equivalent to and therefore can be substituted by an alternative literal statement which can express the same thing, albeit in a less poetic way (Black, 1993). This substitution view has underpinned arguments from the academic community that metaphor is polluting scientific language, and should be purged (Pinder and Bourgeois, 1982). This substitution view has however been challenged by an alternative theoretical perspective which suggests that metaphor plays a much more fundamental role in how humans make sense of the world around them (Lakoff and Johnson, 1980b).

The metaphorical basis of *thought* had been speculated upon through the twentieth century (Richards, 1936; Black, 1993; Reddy, 1993), before Lakoff and Johnson’s (1980b) influential text consolidated and popularized a *conceptual* theory of metaphor (Lakoff and Johnson, 1980b, 1980a, 1999; Lakoff and Turner, 1989; Lakoff, 1993). Conceptual Metaphor Theory frames metaphor as a fundamental scheme by which people conceptualize the world and their own activities (Gibbs, 2008), and remains the most dominant theoretical perspective

underpinning the large and diverse, multi-disciplinary research effort on metaphor (Rasse, Onysko and Citron, 2020).

According to Lakoff and Johnson (1980b) the human conceptual system – the system in terms of which we think, speak and act - is fundamentally metaphorical. It is composed of hundreds of conceptual metaphors through which humans are able to make sense of the world around them (Lakoff, Espenson and Schwartz, 1991). Conceptual metaphors help us to understand and conceptualize unfamiliar or unknown phenomena and world experiences in terms of our knowledge about something much more familiar. Thus, instead of merely a ‘figure of speech’ (OED, 2010), metaphor has instead been defined as ‘a cross-domain mapping in the conceptual system’ (Lakoff, 1993, p. 203), where a conceptual domain refers to any coherent organization of experience (Kovecses, 2010). We can make sense of an abstract concept or phenomena, such as *love, anger, time, change, causality, and morality* (referred to as the ‘target’) using the knowledge we have about another, often more concrete phenomena from a different domain of experience (known as the ‘source’ domain) (Lakoff, 1993; Grant, 2001).

A common example is the metaphoric conceptualization of TIME IS MONEY (Lakoff and Johnson, 1980b). This is a common conceptualization of time in modern Western industrialized societies (Lakoff and Johnson, 1999). The abstract concept of time (the target domain) is conceptualized in terms of knowledge and understanding of the relatively more familiar and tangible conceptual domain of money (the source domain). Money is culturally understood as a limited resource and a valuable commodity. Conceptualizing time as money enables us to speak as though time can be *spent, wasted, saved, and accrued*. This is seen in common everyday phrases such as, ‘you’re *wasting* my time’, ‘how do you *spend* your time?’, or ‘the traffic *cost* me an hour’. Such expressions are referred to as metaphoric linguistic expressions, which are surface realizations of more fundamental cognitive

conceptualizations (Lakoff, 1993, p. 203).³ As communication is based on the same conceptual system that we use to think about and act within the world, metaphoric expressions used in language provide a means to find out about what that conceptual system is like (Lakoff and Johnson, 1980b). It therefore becomes possible to infer cognitive structures through metaphoric linguistic expressions.

Another example is the conceptual metaphor of LOVE IS A JOURNEY. To ask, ‘where is our relationship *going?*’, for example, is used as evidence for the suggestion that the human conceptual system constructs the abstract concept of love in terms of knowledge about the concept of journey (Kovecses, 2010). This is made possible through a process of systematic and elaborate mappings between constituent elements of the target and source domains. For example, Table 1 depicts systematic mappings in the conceptual metaphor of LOVE IS A JOURNEY.

Table 1 Mappings for LOVE IS A JOURNEY (adapted from Kovecses, 2010, p. 9).

<i>Source domain: Journey</i>	<i>Target domain: Love</i>
<i>The travellers</i>	= <i>The lovers</i>
<i>The vehicle</i>	= <i>The love relationships</i>
<i>The journey</i>	= <i>Events in the relationships</i>
<i>The distance covered</i>	= <i>Progress made</i>
<i>Obstacles encountered along the way</i>	= <i>Challenges in the relationship</i>

This metaphor gives rise to a range of commonplace and commonly understood linguistic metaphoric phrases, such as ‘we’ve hit a *crossroads*’ and ‘our relationship has hit a *dead end*’, ‘*where is our relationship going?*’ and ‘we are *back on track* again’ (Lakoff, 1993; Gibbs, 2011; De Mendoza and Hernandez, 2011).

³ Following the convention of cognitive linguistics, conceptual metaphors are presented in UPPER CASE and metaphoric linguistic expressions are presented in lower-case *italics* (Lakoff, Espenson and Schwartz, 1991; Kovecses, 2010).

According to conceptual metaphor theory, target concepts are most frequently conceptualized in terms of knowledge drawn from cultural and bodily experiences (Lakoff and Johnson, 1999). The examples so far have illustrated conceptualizations of the abstract concepts of time and love in terms of cultural understandings of money and journeys. Metaphorical conceptualizations of everyday experiences are also heavily influenced by bodily experiences, particularly related to the sensor and motor functions of the human body (Lakoff and Johnson, 1999; Gibbs Jr., 2006). Subjective experiences are therefore said to be *embodied* as they are constructed and understood using bodily experiences in space and time (Lakoff and Johnson, 1999; Gibbs Jr., 2006; Kovecses, 2010).

For example, the physical *warmth* experienced when embracing someone affectionately is used to understand what is meant by *affection* (as seen in the conceptual metaphor, AFFECTION IS WARMTH). Based on this common conceptual metaphor, it makes sense to us to describe a relationship as *warm*. It is also easy to understand the positive connotations associated with such an everyday (and likely unnoticeable) metaphor (Lakoff and Johnson, 1999; Andriessen and Gubbins, 2009). Similarly, observing the rise and fall of levels of piles and fluids as more quantity is added or subtracted enables us to speak metaphorically about prices being *high*. This is rooted in the conceptual understanding that MORE IS UP (Lakoff and Johnson, 1999, p. 51).

Although the metaphoric expressions used in language provides a means of accessing the underlying cognitive structures, the pervasiveness of conceptual metaphors as a matter of thought is further demonstrated by evidence of *non-linguistic* manifestations of conceptual metaphors (Lakoff, 1993; Grant and Oswick, 1996a; Kovecses, 2010). These include, for example, gestures (Cienki and Muller, 2008) and pictures and films (Forceville, 2008). Forceville (2008) cites a scene in the film, *Mary Poppins*, in which Uncle Albert literally rises to the ceiling when he is having fun and laughing, as an example of a non-linguistic

manifestation of the conceptual metaphor, HAPPY IS UP. The physical experience of being upright and energetic when experiencing happiness (as compared with relatively more stooped physical positions which are associated with ill-health or depression) underpins conceptualizations of *happiness* and *control* in terms of upright physical bodily experiences (Lakoff and Johnson, 1980b). This is evidenced in such metaphoric linguistic expressions as ‘I’m feeling *up* today’ (based on the conceptual metaphor HAPPY IS UP) and ‘I’m *on top of* things’ (based on the conceptual metaphor, CONTROL IS UP) (Lakoff and Johnson, 1999, pp. 50–53).

An alternative embodied conceptualization of time can be seen in the metaphoric conceptualization of time terms of the physical space and orientation of the human body (TIME IS SPACE). The abstract concept of time is given structure through an array of mappings, in which elements of time are mapped to dimensions of physical space (Table 2).

Table 2 Mappings for TIME IS SPACE (adapted from Andriessen, 2006, p. 95).

Source domain: Space	Target domain: Time
Location of the observer	= The present
Space in front of the observer	= The future
Space behind the observer	= The past

In linguistic terms, this enables us to comment on how challenging events are ‘*behind us*’ or commenting that ‘he has a great *future in front of him*’. In non-linguistic terms, this is realized through the common gesture of using an outstretched arm pointing outwards from our body to indicate the future (Cienki and Muller, 2008). These are just some examples of the thousands of conceptual metaphors that metaphor scholars have so far identified (Lakoff, Espenson and Schwartz, 1991).

Evidence of non-linguistic manifestations of conceptual metaphors have helped, to some extent, to rebut criticisms that conceptual metaphor theory has been characterized by a circular argument which relies too heavily upon evidence from linguistic data - the

phenomena it purports to explain (Cienki, 1998). Proponents of conceptual metaphor theory argue that metaphoric linguistic expressions provide the evidence of the existence of conceptual metaphors, and this is known because we can see evidence of the conceptual metaphors expressed in language (Cienki, 1998; Forceville, 2005). Gibbs (2014) demonstrates some of the wider key criticisms of Conceptual Metaphor Theory. These include criticism of its tradition of finding evidence of conceptual metaphors from isolated and de-contextualized examples, a tendency towards confirmation bias, as certain examples of linguistic metaphors are promoted because they support the existence of a particular conceptual metaphor, and the reliance on the analyst's intuition in identifying linguistic metaphors and inferring the conceptual metaphors to which they relate (Kövecses, 2008; Gibbs, 2014).

However, conceptual metaphor theory has nonetheless become the dominant perspective on metaphor (Gibbs, 2014). It has recently been invoked to inform understanding of the metaphoric constructions of the COVID-19 crisis and the implications for the responses taken (Oswick, Grant and Oswick, 2020). Its central tenets have also underpinned inter-disciplinary research on metaphor from a diverse array of disciplines, including, for example, marketing and consumer psychology (Te Vaarwerk, van Rompay and Okken, 2015; Landau, Zhong and Swanson, 2018; Delbaere and Slobodzian, 2019), accounting (Amernic and Craig, 2009), medical education (Rees, Knight and Wilkinson, 2007), and gambling studies (Lopez-Gonzalez *et al.*, 2018).

More specifically, it has influenced discussions of the influence of metaphor in theory development across disciplines, including development psychology (Zittoun and Gillespie, 2020), physical sciences (Brown, 2008) and business history (Wadhvani, 2020), as well as organization theory which has seen several influential texts dedicated to metaphor in

organizational research, theory and practice (Grant and Oswick, 1996b; Morgan, 1997; Ortenblad, Trehan and Putnam, 2017).

Most importantly for the purposes of the present study, conceptual metaphor theory continues to represent an influential force in studies of metaphor within multi-disciplinary research on sustainability (Romaine, 1996; Frischherz, 2010; Peattie, Gruska and Frischherz, 2012; Rout and Reid, 2020). The conceptual theory of metaphor makes it possible to position metaphor as a potentially ‘deep leverage point’ for sustainability transformation – that is a point of intervention within complex systems that can lead towards transformational change for sustainability (Meadows, 1999; Abson *et al.*, 2017). This perspective is implicit across discussions of metaphor and sustainability.

Inspired by cognitive perspectives on metaphor, and thus constructing metaphor as a central means through which the complex challenge of sustainability is understood and constructed, scholars from an array of disciplines have recognized, more or less explicitly, the place of metaphor in the sustainability challenge. Scholars across a wide range of fields have thus discussed metaphor in terms of its power and implications for constraining and enabling efforts towards the achievement of true sustainability, including management education (Audebrand, 2010), biological sciences (Larson, 2011; Kueffer and Larson, 2014; Raymond *et al.*, 2013), ecological economics (Norgaard, 1995, 2010), linguistics (Romaine, 1996), human ecology (Hardin, 1974) as well as environmental sustainability sciences (Berry, 2015; Prince, 2010), environmental philosophy (Keulartz, 2007), and organization theory (Jermier and Forbes, 2011, 2016; Barter and Russell, 2013). The next section introduces key concerns across this literature.

2.3.3. Metaphors – liberating and constraining for sustainability.

Section 2.2.3 demonstrated that sustainability has been described as an ‘essentially contested concept’, wherein the meaning of sustainability is constructed from a range of alternative and competing viewpoints on issues such as the ontological status of nature, and humanity’s relationship with it. A key way of organizing different viewpoints on sustainability has been through recognizing alternative metaphoric constructions of planet Earth, and humanity’s relationship with it (e.g., Gladwin, Kennelly and Krause, 1995; Dryzek, 2013). For example, alternative perspectives variously metaphorically construct Planet Earth as a mechanistic system which can be manipulated, controlled, and improved upon by humanity, or as an organic complex natural system of which humans are an integral and ‘indissociable’ element (Gladwin, Kennelly and Krause, 1995, p. 883).

Different metaphors have been associated with different perspectives across the weak – strong sustainability divide. Strong sustainability theorists have metaphorically conceptualized planet Earth as the *common land of a medieval village* in Hardin’s (1968) *Tragedy of the Commons*, as a *lifeboat* (Hardin, 1974), and a *spaceship* (Boulding, 1966; Ward, 1966; Fuller, 1969). In his elaboration of the metaphor of planet Earth as a spaceship, Boulding (1966, p. 7) described planet Earth as ‘without unlimited reservoirs of anything, either for extraction or for pollution’. Extending the metaphor further, Boulding (1966, p. 8) describes a *spaceman economy* as one in which ‘throughput is by no means a desideratum and is indeed something to be minimized rather than maximized’. This contrasts his metaphoric depiction of the *cowboy economy* which assumes limitless resources.

Through these metaphoric images, Earth is conceptualized as a closed system with a finite capacity to act as a *source* (of resources as inputs to human production systems) and *sink* (capable of absorbing and assimilating the waste products that are expelled from such systems). These ideas have been further reflected within related metaphors of planetary

thresholds, limits, and boundaries (Meadows and Meadows, 2007; Rockstrom *et al.*, 2009; Ehrlich, Kareiva and Daily, 2012; Steffen *et al.*, 2015). They can be closely associated with scientific efforts to measure humanity's *ecological footprint* (Wackernagel and Rees, 1996; WWF, 2021) and establish a 'safe operating space' for humanity (Rockstrom *et al.*, 2009; Steffen *et al.*, 2015). Such perspectives therefore view the current state of the environmental crisis as alarming. Common metaphors that construct the state of the sustainability problem allude to ideas of crisis and collapse (Dryzek, 2013), with a common recourse to metaphors related to the imagery of war (Romaine, 1996; Dryzek, 2013).

The use of such metaphors may simply be seen as merely illustrative means of capturing, transporting, and communicating a great deal of meaning about the sustainability crisis (Ortony, 1975). However, in terms which may be considered consistent with conceptual metaphor theory, many scholars have expressed concern about the power of metaphor to constrain sustainability progress (Romaine, 1996; Princen, 2010; Larson, 2011). As metaphor structures our experience of the world and therefore the specific nature of the sustainability challenge, so it informs our action towards it. How a problem, such as sustainability, is constructed influences what are deemed to be legitimate, logical, and relevant solutions (Schon, 1979; Hajer, 1996). Which of these constructions dominates will therefore most strongly influence policy responses (Romaine, 1996). Therefore, Princen (2010, p. 61) characterizes metaphors as 'institutions', because they 'establish a society's norms and principles, from which we get rules, and procedures, laws and regulations'. Given that sustainability concerns the future of humanity, the power of metaphor has been viewed as having the potential to kill (Romaine, 1996). Romaine (1996, p. 175) suggests that 'our future depends critically on which metaphorical conceptions predominate.'

The issue of the domination of certain metaphors has already been shown to have been a point of concern for organizational scholars. They have pointed to the predominance of

certain metaphoric conceptualizations of organizations as limiting the development of alternative conceptualizations of organizations, and therefore limiting the progress of organizational theory (Morgan, 1980). Morgan (1997) suggests that the predominance of the machine metaphor in organization theory and practice means it has become second nature to organize in this way. Along similar lines, it has been suggested that as some metaphoric *constructions* of sustainability reality come to predominate, they can become taken for granted as orthodox *depictions* of reality. So entrenched, they can constrain the development of alternative perspectives and therefore stymie the action necessary for true sustainability action (Romaine, 1996).

This has largely been linked to the issue of values. As metaphors provide abstract concepts with their fundamental structures, so those concepts can become inherently associated with the values of the source domain (Lakoff, 2002). As has been mentioned, conceptual metaphor theory suggests that everyday metaphoric conceptualizations occur through drawing on shared and common domains of experience either based on common bodily experiences of the world, or in terms of shared cultural contexts (Goatly, 2007). This means that metaphoric conceptualizations provide not only ontological structure, but inform normative judgements (Hunt and Menon, 1995). For example, Barter and Russell (2016) criticize the dominance of the organism and machine metaphors for organization for perpetuating anthropocentric values within organization studies (Shrivastava, 1994; Gladwin, Kennelly and Krause, 1995; Purser, Park and Montuori, 1995).

Similar concerns have been expressed around the values associated with metaphors of war. Widely shared cultural understanding of the domain of experience of war has meant that war has become a key source domain through which a range of issues and concepts are conceptualized. These include, for example, arguments ('I've never *won* an argument with him') (Lakoff and Johnson, 1980b, p. 4), gaining physical intimacy ('sexual *conquest*')

(Lakoff, Espenson and Schwartz, 1991, p. 164), and treating illnesses (Lakoff, Espenson and Schwartz, 1991, p. 176), such as *fighting* cancer (Hendricks *et al.*, 2018). But it has also been repeatedly criticized by scholars who argue that the values of war are inappropriately transferred to other target concepts, including sustainability.

In biological sciences, Larson (2011) and Kueffer and Larson (2014) expressed concern at the tendency for scientists to draw upon the source domain of war to metaphorically construct non-native species as ‘alien’ or ‘invasive’ species. The effect, they argue, is to devalue the species in their entirety, and thus sanction certain (inappropriate) popular or policy responses. In strategic management, Audebrand (2010) suggests that the dominance of war as a metaphor for organizational strategy may no longer be appropriate in the context of sustainability because of its emphasis on adversarial relationships.

Other metaphors have similarly been challenged for perpetuating values that are seen to be incongruent with the true spirit of sustainability. Princen (2010, p. 64) suggests that ‘if there were a single metaphor...that best captures unsustainable societies – past and present – it would be *growth*’. As has been discussed, the issue of economic growth constitutes a key point of contention for sustainability theorists. Weak and strong sustainability scholars argue that their views for and against growth, respectively, are not only consistent with, but necessary for the achievement of sustainability (Norgaard, 1995). However, Princen (2010) demonstrates that the positive values of maturation that are associated with the concept of growth have been inappropriately transferred to the meaning of growth in the economic context. The positive values of growth in the context of organismic maturity, such as the physiological growth of a child or agrarian growth of stocks, has informed a positive view of the value of a *growing* economic system without taking into account that the economic system has no comparable ‘built in brakes’ – that is negative feedback loops that are

sufficiently timely to constrain economic growth in line with environmental *limits* (Princen, 2010, p. 64).

The environmental *limits* metaphor itself is also deemed to be problematic. Norgaard (1995) writes, ‘I am concerned that the idea of limits is most applicable to mechanical systems, as formalized by Newton a little over three centuries ago. Many argue that Newton’s mechanics has been the systems perspective that has dominated modernization and created the systemic problems we have environmentally and socially’ (Norgaard, 1995, p. 130). Mechanistic metaphors have been widely associated with an anthropocentric worldview that has disconnected humanity from nature (Gladwin, Kennelly and Krause, 1995; Barter and Russell, 2013). It has constructed humans as morally superior to non-humans, and therefore justified humans’ domination of nature (Purser, Park and Montuori, 1995, p. 1054). Through this metaphor the natural world is constructed in instrumental terms as a commodity to be manipulated, exploited, and controlled by, and for the benefit of, humankind.

Along similar lines, Raymond *et al.* (2013) and Norgaard (2010) have highlighted and critiqued the extent to which ecologists’ and economists’ discussions of human-nature relationships around the ecosystem services framework have been based on the metaphor of *economic production*. They suggest that this dominant metaphoric framing has encouraged a singular scholarly focus on the *benefits of eco-systems to humans* in terms of how the processes of nature deliver supplies and goods. Norgaard (2010) demonstrates how an attractive and effective metaphor such as *ecosystem services* can take hold and become taken for granted as a model of reality with a powerful influence over the direction of research and policy goals.

Therefore, in parallel with discussions about the limitations of existing metaphors for the achievement of sustainability, there is an equally rich discussion about the power of (new)

metaphors for changing thinking and creating new visions of a sustainable future (Norgaard, 1995; Ehrenfeld, 2008; Princen, 2010). In line with the view of the pervasiveness and fundamental nature of metaphor as part of our conceptual system, changes in those metaphors can similarly change what is real for us (Lakoff and Johnson, 1980b) and therefore can change our action towards it. Ehrenfeld (2003, p. 2) suggested that change takes place by ‘grabbing on to a metaphor that dissolves the problems that have stymied action’.

Numerous scholars have therefore called for and articulated new metaphors for the environment which may be more compatible with an ecologically and socially sustainable order (Norgaard, 1995; Princen, 2010; Raymond *et al.*, 2013; Jermier and Forbes, 2016). For example, Princen (2010) proposed a range of metaphors for the environment, including, *saving the seed*, *a tide*, and *a homestead*. Raymond *et al.* (2013) also propose alternative metaphors for human-nature relationships to counter the predominance of framing ecosystem services in terms of economic production. They propose the metaphors of *stewardship*, *web-of-life*, and *ecocultural-community*.

They suggest that the *stewardship* metaphor is characterized by humans’ moral concerns for protecting ecosystem services. They call it a ‘unifying metaphor’, that compares the Earth to a household, in which humans hold a responsibility to care for that household (Raymond *et al.*, 2013, p. 539) The *web-of-life* metaphor represents humans as one part of a wider ecological system, meaning that humans have a responsibility to understand the impact of their actions on various components of the broader system. Finally, the *eco-cultural community* metaphor depicts how humans treats nonhuman species and aspects of the environment as part of their community.

The field of Industrial Ecology may be seen to exemplify systematic efforts to leverage alternative metaphors for the purposes of generating new knowledge. The field is rooted in

the assumption of the need to redesign industrial economic systems *in terms of* ecological systems (Jackson, 2003). The field has grown in parallel with the sustainability crisis, and has achieved much progress in its efforts to metaphorically construct and explore industrial systems as living ecosystems (Gruner and Power, 2017; Tate *et al.*, 2019). However, this metaphor too has been highlighted for its limitations in sustainability terms. Specifically, Ehrenfeld (2003) argues that it is problematic because it omits aspects of human *social* and *cultural* life which are also integral to true sustainability.

This serves to re-emphasize that all metaphors are fundamentally partial, simultaneously *highlighting* and *hiding*, *constructing* and *constraining* certain dimensions of the target phenomenon. This means there may be no singular, perfect metaphor, and therefore that a pluralistic perspective which facilitates an ‘interplay of competitive metaphors’ may be essential (Hardin, 1974, p. 561; Raymond *et al.*, 2013). For example, Raymond *et al.* call for ecosystems researchers to take a deliberative approach to working with alternative metaphors in order to foster better understanding of how humans relate to and value ecosystems. This is because each alternative metaphor ‘reveals different parts of the human-environment dynamic and is aligned with different management objectives and indicators of success’ (Raymond *et al.*, 2013, p. 542). In organizational theory, such pluralism has similarly been seen as important for theory development (Morgan, 1997). From a sustainability perspective, such pluralism has been seen as essential to ‘avoid unconscious suicide’ (Hardin, 1974, p. 561).

Across discussions of organizational theory and the challenges of sustainability, metaphor is recognized as representing much more than merely a poetic and dispensable means of describing worldly experiences. It frames and constructs the meaning of worldly experiences. The influence of the conceptual theory of metaphor is highly apparent, particularly as sustainability is implicitly and explicitly discussed as being as much (if not more) of an issue

of how we think about and thereby construct the world and our place in it, as it is about technological innovations and policy mechanisms (Garrard, 2011). Writing from the perspective of eco-criticism, Garrard (2011, p. 205) suggests that ‘[i]n addition to the clever technologies, wily policies and ethical revaluations that we shall need to respond to environmental crisis [sic], we shall need better...metaphors’.

The literature discussed in this section demonstrates the extent to which metaphor has become a major topic of study within both the context of theory development and the context of sustainability. Based on the influence of the conceptual theory of metaphor, metaphors have been seen as pervasive and unavoidable features of everyday reasoning. Contextualized within the context of organizational theory development, they are central to the symbolic processes by which scholars make sense of and come to theorize abstract organizational phenomena. In the sustainability context, they have been seen as central to the processes of constructing the meaning of nature, and humanity’s relationship with it, and therefore the meaning of a socio-ecologically sustainable order. The paradox of metaphor is that metaphors can simultaneously liberate and constrain. Princen (2010, p. 65) therefore characterizes metaphor as ‘a powerful weapon, which can repulse invaders and vanquish heinous rulers, but can also do great harm to innocents’. Against this backdrop it becomes possible to critically reflect on how metaphor has been framed within the supply chain field.

2.4. Metaphor in the supply chain field.

The discussions on metaphor, theory, and sustainability in the preceding sections provide evidence that there is significant value in taking metaphor seriously in the sustainable supply chain field. Section 2.3 has demonstrated that there are rich literatures which recognize and highlight the significance of metaphor in the contexts of theory development and sustainability, which are highly pertinent for understanding and addressing current challenges in the sustainable supply chain field.

Although explicit consideration of metaphor is absent from discussion of sustainable supply chain theory development, there is some discussion of metaphor within the broader associated fields of operations, purchasing and supply chain management. Published studies which have explicitly considered metaphor include Garud and Kotha (1994), Chen *et al.* (2013), Foropon and McLachlin (2013) and Ramsay and Caldwell (2004).

Based on a review of major Operations Management and Supply Chain Management (OM/SCM) journals between 1998-2013, Foropon and McLachlin, (2013) demonstrated the extent to which metaphors have helped scholars to understand operations and supply chain management research topics and have been used within theory building efforts. They highlight the variety of metaphors across operations and supply chain theory, such as *the value stream* metaphor, the *supply chain* metaphor, as well as the *athlete* metaphor to understand the relationship between lean and agile. They also illustrated the use of alternative metaphors as alternative lenses for management phenomena through the case of ISO 9000 implementation. They demonstrate how alternative metaphoric constructions of the process of ISO 9000 implementation leads to alternative ways of seeing and understanding, and therefore alternative ways of managing.

Ramsay and Caldwell (2004) similarly illustrate the prevalence of metaphors in purchasing and supply contexts, particularly the prominent *supply chain*, *dyad*, *partnerships* and *network* metaphors. They take a more critical perspective on the extent to which metaphors have the potential to become taken for granted in management reality while at the same time taking a post-modern perspective on the need for multiple metaphors to convey and explore the complexity and change of purchasing reality.

Finally, Garud and Kotha (1994) and Chen *et al.* (2013) deploy a specific process of systematically comparing images brought together in a metaphor to develop conjectures

about specific operation and supply chain phenomena. Garud and Kotha (2013) theorize flexible manufacturing systems in terms of the metaphor of the human brain, while Chen *et al.* (2013) theorize strategic buyer-supplier relationship dissolution through the metaphor of marital divorce.

In sum, these papers usefully capture a number of aspects of the multi-faceted nature of metaphor including both the unavailability and risks of metaphor (Ramsay and Caldwell, 2004) as well as the capabilities of metaphor to facilitate theoretical insight (Garud and Kotha, 1994; Chen *et al.*, 2013; Foropon and McLachlin, 2013).

However, considering recent insights into the challenges facing the development of supply chain theory in the sustainability context, along with a broader review of the conceptual theory of metaphor and the place of metaphor in achieving sustainability, their perspectives are deemed to be limited in their ability to address the challenges of sustainable supply chain theory development. Specifically, they take a relatively narrow and utilitarian perspective on metaphor which lacks more explicit recognition of the broader, fundamental, and conceptual role of metaphor in humans' (and scholars') fundamental reasoning. The conceptual view of metaphor highlights metaphor as being not only important in, but *central* to, the construction of reality broadly, as well as to the construction of sustainable supply chain reality, more specifically.

2.5. Towards research objectives.

The literature discussed in section 2.3 and 2.4 provides the justification for the study's three key objectives (Figure 1). It demonstrates that the existing framing of metaphor within the supply chain literature is relatively narrow and fragmented and therefore is limited in its value for addressing the needs of sustainable supply chain theory development. These limitations relate to the way in which metaphor itself has predominantly been framed in

supply chain scholarship. This informs the study's first objective which is *to demonstrate the scope and relevance of metaphor for the sustainable supply chain field*.

The literature reviewed in section 2.3. demonstrates that the two 'major scholarly projects' associated with recognition of the conceptual function of metaphor have been shaped around efforts to recognize and overcome the limitations of existing metaphors, and to leverage the creative potential of metaphors for developing novel insights. These approaches inform the study's other two objectives, which are *to critically engage with the metaphoric influences on sustainable supply chain theory development*, and *to harness the liberating potential of metaphor for the benefit of sustainable supply chain theory development*.

The next and final section of this chapter begins to address the study's first objective by specifically framing metaphor in terms of *taking a metaphor perspective*. The next section provides a definition for this frame and demonstrates why this frame resonates with the needs of the sustainable supply chain field.

2.6. Framing metaphor to ensure relevance for the sustainable supply chain field – towards a metaphor perspective.

In their paper on theorizing through metaphor, Chen *et al.* (2013) uses the definition of metaphor as 'a linguistic utterance in which the combination of words is literally deviant in the sense that terms that have originally or conventionally been employed in relation to a different concept or domain are applied and connected to a target term or concept' (Cornelissen *et al.*, 2005, p. 1549). Although a useful definition, this does not explicitly address the conceptual functioning of metaphor. Chen *et al.* (2013) seems to frame the issue of metaphor in supply chain theorizing in predominantly utilitarian, and therefore 'optional', terms. Such a framing is deemed to ill-serve the sustainable supply chain field by failing to

acknowledge the broader pervasive influence of metaphor within human and scholarly thought.

Therefore, to demonstrate and ensure relevance of metaphor for the sustainable supply chain field, this thesis explicitly frames the issue of metaphor as *taking a metaphor perspective*. Inspired by the assumptions of conceptual metaphor theory, and its influence within discussions of metaphor and sustainability, a ‘metaphor perspective’ is defined in this thesis as ‘a general recognition of the central role that metaphoric conceptualization plays in constructing, understanding and exploring every day and scientific phenomena’.

Countering existing or dominant frames of metaphor in figurative, poetic, linguistic or utilitarian terms, framing metaphor as *taking a metaphor perspective* may be seen as being akin to a research strategy (Bryman, 2004) which fundamentally assumes the centrality of metaphoric representations within (sustainable supply chain) theory and research. This frame therefore helps to represent and promote a broader and more holistic research agenda by which supply chain scholars think simultaneously about uncovering and remaining sensitive to the metaphoric roots of the field (Morgan, 1997; Burrell and Morgan, 2001), as well as leveraging new metaphoric images in order to see (and construct) supply chains anew. Conceptualizing metaphor in terms of taking a metaphor perspective is deemed to be particularly useful for addressing the specific challenges facing sustainable supply chain theorizing for several reasons.

First, a metaphor perspective is inherently constructionist and assumes that what we perceive as (supply chain) reality is not incontrovertible (Grant and Osrick, 1996a). A metaphor perspective therefore supports a reflective and constructionist view of theorizing supply chains as active experimentation with alternative metaphoric representations (Weick, 1989). This can be considered timely in light of recent calls for the development of theory of the

supply chain (Carter, Rogers and Choi, 2015). It can facilitate efforts to explore and expand dominant conceptualizations of 'supply chain' which has been traditionally and predominantly conceptualized as network and complex adaptive system (Carter, Rogers and Choi, 2015).

As sustainability is *not just another supply chain issue*, Matthews *et al.* (2016) has suggested that development of sustainable supply chain theory will require theorizing to be seen as 'a dynamic play with knowledge' in which supply chain theorists 'struggle' to free themselves from dominant modes of thinking (Weick, 1995). A metaphor perspective is consistent with such a perspective on theorizing as it highlights metaphoric representations as central to constructing and perpetuating those dominant modes of thinking. They are therefore an important locus of change.

Recognizing metaphors as a locus of change may be particularly important in the context of calls for alternative paradigmatic perspectives on sustainable supply chains (Markman and Krause, 2016; Matthews *et al.*, 2016; Montabon, Pagell and Wu, 2016), seeing as similar calls in wider organization and management theory have largely gone unheeded (Heikkurinen *et al.*, 2016). Although calls for working within alternative management paradigms have been heard for three decades (Shrivastava, 1994, 1995; Gladwin, Kennelly, and Krause, 1995; Purser, Park and Montuori, 1995; Ehrenfeld, 2012), these perspectives have largely remained on the periphery of organization theory (Cunha, Rego and Da Cunha, 2008; Heikkurinen *et al.*, 2016).

It remains to be seen whether recent, comparable calls within the sustainable supply chain field (Matthews *et al.*, 2016; Montabon, Pagell and Wu, 2016) will infuse and fundamentally shift mainstream sustainable supply chain research and theorizing. A metaphor perspective may be valuable in helping to realize paradigmatic shifts by highlighting dominant

metaphoric representations of supply chains as being influential in reflecting and perpetuating dominant paradigmatic assumptions (Morgan, 1980), such as the assumptions of instrumentalism (Montabon, Pagell and Wu, 2016), and weak sustainability (Matthews *et al.*, 2016).

By highlighting metaphor as central to the construction of (sustainable supply chain) reality, a metaphor perspective is also consistent with the view that theory plays a part in the construction of social reality (Ferraro, Pfeffer and Sutton, 2005). A metaphor perspective within sustainable supply chain theory therefore buttresses calls for supply chain scholars to become more aware of their own influence on the construction of sustainable supply chain reality. A metaphor perspective therefore aligns with, and renews, calls for caution in the development and promotion of normative management prescriptions through a commitment to surfacing normative assumptions (New and Mitropoulos, 1995; New and Ramsay, 1997). This is particularly important in the sustainability context given that calls for the sustainable supply chain field to drive, as well as report on, sustainable supply chain practice will require scholars to theorize sustainable supply chains which do not yet currently exist (Pagell and Shevchenko, 2014).

Therefore, finally, a metaphor perspective on sustainable supply chain theorizing is also consistent with the assumption that academia exists within a broader social and cultural context which is dominated by anthropocentric and technocentric paradigms and an 'expansionist, consumerist, fossil fuel dependent, debt laden order' (Princen, 2010, p. 61). A metaphor perspective may influence greater recognition of what Larson (2011) calls a *post-normal science*. Larson (2011) emphasizes the interaction and feedback between social and cultural assumptions on the one hand, and scholars' metaphorical representations of empirical phenomena on the other. This perspective suggests that the particular character of scholars' 'struggles' in sustainable supply chain theorizing (Matthews *et al.*, 2016) may be seen as

freeing oneself from one's own everyday *socio-cultural* assumptions, as well as scientific and academic assumptions, given that the former may be partly responsible for the latter.

2.7. Conclusion.

As has been mentioned in the introduction chapter, the conceptual nature of this study means that pertinent literature is explored and deployed throughout the thesis. This chapter has therefore sought to provide a conceptual background to the study by introducing the key research streams – related to sustainable supply chain, metaphor and organization theory, and metaphor and sustainability - that have given shape to the study's core concerns.

Research on sustainability in the supply chain field is burgeoning, as supply chains are central to the challenge of transforming systems of production and consumption in line with the perceived requirements of sustainability. Although mainstream sustainable supply chain theory and research has, to date, largely proceeded in terms of an instrumental logic, recent work has signaled a shift and has provided guidance and suggestions for the future development of the field. This chapter has positioned metaphor as central to that future development.

This chapter has demonstrated the extent to which metaphor has been a topic of study in its own right. The influence of the conceptual theory of metaphor has elevated recognition of metaphor as a central feature human thought, and therefore language, and action. As a central feature of cognitive processing, metaphor has become a key point of consideration within discussions of the role of metaphor in scientific thought, language, and theory development. It has also been identified as significant across multi-disciplinary writings on the issue of sustainability.

Based on these literatures, the study's three objectives have been identified. These objectives are informed by a conceptual view of metaphor. For this reason, they diverge slightly from

the dominant accounts of metaphor in supply chain literature. The chapter has therefore begun to address the study's first objective to demonstrate the relevance of metaphor for the sustainable supply chain field by consciously re-framing metaphor in terms of taking a metaphor perspective. This frames metaphor in terms of a broader and more holistic research agenda than has been represented by considerations of metaphor in operations, purchasing and supply chain literature to date. The remainder of the thesis thus sets out to explore how to operationalize that metaphor perspective in the context of sustainable supply chain theory development. The next chapter, Chapter 3, outlines the methodological approach that characterized this effort and which has led to the study's core knowledge claims.

Chapter 3 – Methodology.

3.1. Introduction.

This chapter aims to discuss the study's approach to addressing the study's research aim, which is to explore the role of metaphor in sustainable supply chain theory development. To do this, it first articulates the philosophical assumptions that underpin the study. It is important to articulate the researcher's assumptions about the nature of knowledge (epistemology) and the nature of reality (ontology) because such assumptions are at the core of any research study (Easterby-Smith, Thorpe and Jackson, 2015). Together, ontological and epistemological assumptions inform the fundamental aspects of any study, such as what research topic to investigate and what questions to ask. They also inform decision-making related to what data to collect and how to collect and analyse it (Bryman, 2016).

Secondly, this chapter also discusses the relevance of the study's conceptual design and describes the conceptual research activity that led to the study's core knowledge claims. Demonstrating robustness is more challenging in a conceptual study, which has thus prompted an important discussion of the issue of research quality. In sum, this chapter demonstrates that the study is a conceptual study, characterized by an exploratory and reflective approach, which is rooted in the assumptions of constructionism.

The remainder of the chapter is organized as follows. Section 3.2 discusses the study's research strategy. This includes discussion of the philosophical assumptions that underpin any research study, and the constructionist underpinnings of the present study, as well as the abductive approach to linking theory with research. Section 3.3 discusses the study's conceptual research design and describes the conceptual research activity that led to the study's key knowledge claims. Section 3.4 discusses approaches to the assurance and measurement of research quality, and describes the measures used to assure the study is

relevant and convincing for the sustainable supply chain community. Section 3.5. discusses the pertinent ethical concerns related to engaging with research participants. Section 3.6 concludes the chapter.

3.2. Research strategy.

A common way of organizing alternative approaches to research is to distinguish between *qualitative* or *quantitative* research strategies (Corbetta, 2003; Bryman, 2016). Bryman (2004, p. 19) defines a research strategy as a ‘general orientation towards the conduct of social research’. In general, qualitative, and quantitative research strategies differ in terms of two key dimensions (Bryman, 2004). The first dimension relates to their respective philosophical assumptions (specifically epistemological and ontological perspectives) which impact on the nature and meaning of the research. The second relates to their perspectives on the role of theory in research (whether theory is built through research or tested through research). These dimensions will be used to organize discussion of the characteristics of the present study.

Nonetheless, distinguishing between qualitative and quantitative strategies has also been recognized as far from clear cut (Bryman, 1984, 2004; Lin Chih, 1998). Although it is often suggested that qualitative research strategies are associated with interpretivist assumptions and theory building orientations, while quantitative research strategies are associated with positivistic assumptions and theory testing orientations, Bryman (2004) shows that this is not always the case. For example, some research studies have adopted a qualitative research strategy to *test* theory. This has been described as ‘covert positivism’ (Bryman, 2004). Similarly, quantitative research studies have included methods designed to elicit an understanding of *meaning* (even though quantitative research strategies are often said to be associated with an objectivist ontology).

Acknowledging these complexities is pertinent because, as it will be discussed in section 3.2.2, positivist qualitative studies are commonplace within supply chain research. It is also pertinent because it serves to emphasize the importance of identifying and stating explicitly the assumptions that underpin a study. This aids the researcher in designing a *coherent* research study, as well as to enable the reader to evaluate the *quality* of the knowledge claims (Easterby-Smith, Thorpe and Jackson, 2015). The coherence and quality of a study are bounded by its ontological and epistemological assumptions. The next section explores the possible philosophical perspectives, and the specific influence of the *constructionist* assumptions that have underpinned this study.

3.2.1. Ontological and epistemological assumptions.

The core assumptions of a research study are most often stated in terms of alternative theories of ontology and epistemology (Bryman, 2004; Easterby-Smith, Thorpe and Jackson, 2015). Ontology refers to theory about the nature of reality and the nature of social entities. It centres on the issue of whether social entities can be considered objective entities which exist independently of the human mind, or whether social entities should be seen as social constructions which are built from the perceptions and actions of social actors (Bryman, 2004).

Epistemology refers to theory of knowledge and concerns how a research may best enquire about the world. Epistemology is concerned with the question, ‘how do I know the world?’ (Denzin and Lincoln, 2005, p. 183). Ontological and epistemological assumptions are connected to one another, as ontological positions inform epistemological assumptions. Assumptions about the nature of social *reality* inform assumptions about how that reality can be *known* (Easterby-Smith, Thorpe and Jackson, 2015).

There are a number of different approaches to classifying the variety of perspectives on ontology and epistemology (Bryman, 2004; Easterby-Smith, Thorpe and Jackson, 2015). However, as it is often said that the main debate exists between the opposing epistemological perspectives of positivism and interpretivism, this categorization provides the framework for discussion of key philosophical perspectives in this section (Hudson and Ozanne, 1988; Bryman, 2004; Golicic and Davis, 2012; Easterby-Smith, Thorpe and Jackson, 2015). The positivist and interpretivist epistemological perspectives correspond to objective and constructionist ontological perspectives, respectively (Bryman, 2004). It can be noted that Easterby-Smith, Thorpe, and Jackson (2015, p. 186) articulate the two sides of the epistemological debate as positivism and *social-constructionism* (instead of interpretivism) but they describe social construction as synonymous with ‘interpretivism’ and ‘constructivism’.

3.2.1.1. Positivism.

The positivist epistemology is often associated with an ontological assumption that reality exists ‘out there’, independently of what individuals perceive. This has been labelled as a realist (Easterby-Smith, Thorpe and Jackson, 2015) or objectivist (Bryman, 2004) ontology. Such a reality is assumed to be observable and measurable and consisting of facts to be discovered (Saunders, Lewis and Thornhill, 2019). From the positivist perspective, social as well as physical phenomena are seen to exist independently of the human mind. Social reality is therefore seen to be universal and enduring, and it is therefore logical to study them as a natural scientist would study nature (Saunders, Lewis and Thornhill, 2019).

The positivist epistemology therefore advocates the application of the methods of the natural sciences to the study of social reality (Bryman, 2004). It seeks to discover a universal truth about the social world. It is concerned with the creation of falsifiable facts from which law-

like generalisations can be made about a universal social reality (Saunders, Lewis and Thornhill, 2019). This means that positivistic research values knowledge which is independent of time or space and therefore generalizable. Positivism thus also assumes that the process of knowledge generation through research can be, and should be, objective and value free (Bryman, 2004). This means that the researcher can and should assume a privileged position which is distanced from the object of study (Darby, Fugate and Murray, 2019).

Although it is suggested that the term ‘positivist’ is often used by scholars to label (and denigrate) *other* scholars’ work (Hammersley, 2019), a number of supply chain authors have characterized supply chain management research as predominantly positivistic (Mentzer and Kahn, 1995; Burgess, Singh and Koroglu, 2006; Golicic and Davis, 2012; Darby, Fugate and Murray, 2019). However, it is relevant to briefly acknowledge that while use of the term positivism in the present chapter is used in line with the use of the term in extant, mainstream meta-theoretical literature, it is likely more accurate to use the term *post*-positivism – that is, a reformed form of positivism. Nowadays, assumptions that are routinely labelled ‘positivism’ refer to a hypothetico-deductive approach which differs from *true* positivist research, as it was originally intended.

True positivist research was based on the assumption of *induction*, and emphasized the value of observation and sense perceptions for developing valid knowledge (Sousa, 2010). This contrasts with the common descriptions of positivism as being predominantly concerned with *deduction* and theory testing (Bryman, 2004). Notably, the inductive logic of true positivism has been criticised on the assumption that *all* observations are theory laden (Hanson, 1958; Popper, 1968; Johnson and Onwuegbuzie, 2004).

Post-positivist research therefore amends some of the key assumptions of early positivism and reflects what has now become more generally known and labelled as ‘positivism’. (Post-) positivism is similarly characterized by objectivist assumptions about reality (Bryman, 2016), with positivism often used as a short-hand for objectivism or realism (Hammersley, 2019). But it differs by acknowledging that the influence of the background assumptions, knowledge, and values of the researcher are inevitable. In acknowledging such potential ‘bias’, (post-) positivists make efforts to recognize and limit the possible impact of researcher bias on the research.

Recognition of this nuance between true positivism and its reformed form (which has now become known simply as positivism) helps to contextualize the characteristics of *qualitative* supply chain studies which are underpinned by (post-)positivist assumptions – that is, an objectivist ontology with a desire to explain (control and predict) social phenomena, and efforts to enhance the reliability and validity of knowledge claims for broad application through methodological procedures that are designed to minimize researcher bias.

For example, Darby, Fugate and Murray (2019) demonstrated the (post-)positivist assumptions underpinning Pagell and Wu’s (2009) qualitative study which sought to build theory of sustainable supply chain management from multiple qualitative case studies. This included methodological procedures, such as a theoretical sampling approach to identify cases that could be considered *representative of a wide range* of organizations, formal semi-structure interview procedure to *minimize influence between the researcher and the researched*, the *triangulation* of interview data with archival data sources, and a requirement for 100% *inter-rater reliability to minimize researcher bias* in the processes of coding the data.

Although the (post-)positivist epistemology is dominant within supply chain research, there is increasing recognition that alternative approaches are important for the generation of knowledge and maturation of the field beyond what is possible by (post-)positivist perspectives alone (Golicic and Davis, 2012; Darby, Fugate and Murray, 2019). Interpretive perspectives are more radically opposed to the assumptions of (post-)positivism based on a fundamental rejection of the notion that reality exists ‘out there’. Based on such assumptions, the (post-)positivist paradigm is similarly deemed incompatible with the present study. Instead, the study is characterized by a constructionist epistemology.

The next section therefore first discusses the tenets of a constructionist epistemology, before discussing why and how constructionist assumptions underpin the present study’s core concern and research design.

3.2.1.2. Constructionism.

The constructionist epistemology is generally critical of the assumption that reality exists ‘out there’ independently of the human mind. Instead, the constructionist epistemology emphasizes that the world, and what is known about the world, is constructed. The ontological perspective related to constructionism is therefore described as relativist or subjectivist (rather than realist or objectivist), although there is less of a clear distinction drawn between knowledge and reality from a constructionist perspective. Constructionism assumes that ‘reality’ is better understood as the *meaning* that is attributed to social reality by its participants (Berger and Luckmann, 1966). Research within this tradition thus places greater emphasis on the need to *understand* human *understanding*, rather than to *explain* human *behaviour* (Bryman, 2004).

Given that reality is understood as meaning, the constructionist tradition emphasizes the possibility that there are multiple realities. That means that different observers may have

different viewpoints, which can be equally valid and ‘true’. Reality can therefore vary across place and time (Easterby-Smith, Thorpe and Jackson, 2015). This also means that the constructionist perspective views social reality as being in a constant state of flux as meaning is continually (co-) created and re-created (Saunders, Lewis and Thornhill, 2019).

Constructionist researchers are therefore concerned with understanding how that meaning is created and maintained, with an emphasis on research activity and methods which can capture the rich variety of experiences and meaning that together constitutes social reality (Turnbull, 2002). Therefore, constructionism is most often associated with the use of qualitative data to establish a thick description of reality from the participant’s perspective.

The present study is underpinned by the constructionist epistemology. The present study does not reflect the type of constructionist studies which are often discussed in methodological texts related to business research because the study is not a study of the *meaning* of sustainability or sustainable supply chain research as it is constructed among sustainable supply chain practitioners, or academics. Rather, the study is constructionist in the sense that constructionism has made possible the topic and concern that is at the heart of the study. In accepting the constructionist assumptions that reality (i.e., meaning and knowledge) is constructed, the concern of this study is not to understand what that meaning is, but rather to expose and explore metaphor as central within those meaning-making processes.

The study’s core research concern is therefore an epistemological one, as it concerns processes of knowledge development. It is informed by constructionist epistemological concerns because its foundational assumption is that metaphors are central to the construction of sustainable supply chain knowledge. In chapter 2, the issue of metaphor was conceptualized in terms of taking a metaphor perspective which was also described as a fundamentally constructionist perspective. The metaphor perspective is rooted in assumptions

of the role of metaphor in the construction of reality, and the generation of knowledge (Morcol, 1997). For this reason, debates over the value of metaphor have been characterized in terms of positivists (who want to limit their influence) and non-positivists (who see their unavoidability and value) (Morcol, 1997; Jermier and Forbes, 2011). The ‘metaphor perspective’ taken in this study is therefore deemed to be fundamentally incompatible with the assumptions of (post-)positivism.

Additionally, by focusing on knowledge development processes within the academic sphere, the study adopts the constructionist view that theorizing is a process of construction. In line with a constructionist perspective, it is assumed that academic theory plays a role in the social construction of supply chain sustainability reality. It is therefore also assumed that through the processes of theorizing, knowledge and reality of sustainable supply chains is created, defended, and reproduced in the academic sphere. This reflects constructionist concerns related to what and how certain knowledge passes as knowledge (Turnbull, 2002). Berger and Luckmann (1966) emphasised that ‘a sociology of knowledge will have to deal not only with the empirical variety of knowledge in human societies, but also *the processes by which any body of knowledge comes to be established as reality* [emphasis added]’ (Berger and Luckmann, 1966, p. 15). Against this backdrop, the study assumes the central role of metaphor in such creations and reproductions.

The influence of constructionist assumptions is also discernible in the study in two additional respects. The first relates to the design of the study as an exploratory study which is committed to reflection and self-problematization (Alvesson and Skoldberg, 2018). These concerns relate to wider constructionist concerns related to the role and influence of the researcher in the research process (Easterby-Smith *et al.*, 2015). As the study is a conceptual study, the researcher is central in the research process. Therefore, the design of the study and

the presentation of its findings have been characterized by an openness to responding flexibly to emerging findings and ideas, developing new research objectives considering emergent insight and learning, as well as the presenting the final thesis in a way which captures those insights. This is demonstrated through depiction of the iterative stages of the research study in Figure 3 in section 3.3 of this chapter. It is also apparent in chapter 6 which discusses how the study evolved based on the problematization of some of the study's originating assumptions as a result of emergent insights.

Finally, the constructionist influences on this study are also discernible in terms of the nature of the study's engagement with the community of sustainable supply chain academics, which is discussed further in section 3.3.2. Constructionism emphasises the importance of capturing meaning and understanding through the eyes of those who construct it. Although capturing the meaning and understanding of metaphor through the eyes of sustainable supply chain academics is not the core focus of the study, it is an important element in the development of knowledge about how sustainable supply chain scholars can benefit from metaphor in the development of sustainable supply chain theory. This is naturally closely related to constructionist concerns with authenticity in the research process (Golden-Biddle and Locke, 1993), which petitions the constructionist researcher to build knowledge which is useful and true to the researched community (Turnbull, 2002). This is discussed further in section 3.4 of this chapter which explores quality criteria. Before then, the next section considers the relationship between theory and research in this study.

3.2.2. Linking theory and research.

In addition to philosophical assumptions, the other key means of differentiating between qualitative and quantitative research strategies relates to how the research relates to theory (Bryman, 2016). There are three key approaches to linking theory and research: inductive,

deductive, and abductive. This section discusses these alternative approaches and demonstrates how this study draws on the abductive method of reasoning.

Deduction refers to a method of reasoning in which ‘a person begins with a statement known or believed to be true, and then uses this statement to make conclusions about something else’ (MacInnis, 2011, p. 149). A deductive approach means that the researcher proceeds from a general rule to assert that the rule does (or does not) explain a single case (Alvesson and Skoldberg, 2018). Deduction is therefore characterised by the construction of a theoretical structure based on existing knowledge, which then acts as a framework for guiding research activity and testing existing theoretical claims. Observations are therefore used to test a priori theory.

Induction refers to a method of reasoning in which ‘a person begins with observations and then collates these observations in a higher-order set of conclusions’ (MacInnis, 2011, p. 149) (MacInnis, 2011, p. 149). Alvesson and Skoldberg (2018, p. 4) define the inductive approach as one which ‘proceeds from a number of single cases and assumes that a connection that has been observed in all these is also generally valid’. Creswell (2013, p.45) similarly explains the inductive process as one in which the researcher builds patterns, categories, or themes from the ‘bottom up’. An inductive approach to reasoning is therefore characterised by observation and data as a starting point, from which are induced explanations relating to *what*, *why* and *how* of the phenomenon, i.e. the fundamental building blocks of theory (Whetten, 1989). Observations are therefore used to construct theory.

Inductive and deductive methods of reasoning are usually regarded as mutually exclusive, but in reality the distinction between deductive and inductive approaches is not always clear-cut (Bryman, 2004; Alvesson and Skoldberg, 2018). They may be combined in one study (Perry and Jensen, 2001). Alternatively, another perspective highlights the limitations of purely

inductive and deductive methods and combines and extends them. This is known as abduction. This has been suggested as an influential approach based on the observation that scientific advances often do not emerge from pure deduction or pure induction (Spens and Kovács, 2006).

Central to the abductive method is an iterative and creative research process which alternates between theory and research in a learning loop (Spens and Kovács, 2006), ‘whereby both are successively reinterpreted in the light of each other’ (Alvesson and Skoldberg, 2018, p. 5). This means that the process is iterative as ‘the empirical area of application is successively developed, and the theory...is also adjusted and refined’ (Alvesson and Skoldberg, 2018, p. 5).

This study adopted the abductive method of reasoning. It is not possible for the study to be purely inductive, because the study is informed by a rich theoretical base related to the role of metaphor in organization and management theorizing. This theoretical base has itself been richly informed by broader cognitive perspectives on metaphor in conceptual reasoning, and knowledge of this theory drove the study’s original concerns. For this reason, the study utilised deductive reasoning as it drew upon well-established theory related to metaphor and theorizing to inform the assumptions which have guided and framed this study’s research activity and analyses.

However, it was also not possible for the study to be purely deductive, because there exists no previous explorations of metaphor in sustainable supply chain theory development. Therefore, there was much scope for exploratory and inductive work on the influence, role, and operations of metaphors on knowledge development in the specific context of sustainable supply chain theorizing. Exploratory engagement with the community of sustainable supply chain academics was useful in complementing deductive reasoning in an iterative approach to

exploring how sustainable supply chain scholars can work with metaphors for the benefit of sustainable supply chain theory development. In this regard the study also utilised inductive methods of reasoning.

3.3. Research design.

The study adopted a predominantly conceptual research design. Conceptual studies are most easily characterized by the fact that, unlike empirical studies, they do not rely heavily on information gathered through observation, experience and measurement of real-life experience (Jaakkola, 2020). Instead, they are ‘contributions that focus primarily on theoretical advances without relying on data’ (Yadav, 2010, p. 1). Conceptual research in supply chain management concerns ‘scientific inquiry that relies on abstract thinking – as opposed to empirical, data-driven research – to conceptualize, delimit and solve real-world problems’ (Fawcett *et al.*, 2014, p.2).

Although there is a tendency towards empirical research in supply chain scholarship, the importance of conceptual research has been acknowledged amongst supply chain scholars (Meredith, 1993; Fawcett *et al.*, 2014). Some of the most influential works in many fields are of a conceptual nature (Hirschheim, 2008; Jaakkola, 2020) and this is similarly the case in the supply chain discipline, as conceptual papers by Carter, Rogers and Choi (2015), Montabon, Pagell and Wu (2016) and Pagell and Shevchenko (2014) are among the most highly cited sustainable supply chain papers published within one of the field’s most influential journals, the Journal of Supply Chain Management. Fawcett *et al.* (2014, p.2) similarly asserted that conceptual papers make a ‘real, disproportionate impact’ on supply chain knowledge discovery. This is often because conceptual research is more appropriate than empirical research for addressing particular research questions, or closing particular knowledge gaps (Xin, Tribe and Chambers, 2013; Fawcett *et al.*, 2014). Fawcett *et al.* (2014) suggests that

conceptual research is particularly fitting in three scenarios: when the problem is not conducive to empiricism (such as challenging the assumptions underlying dominant theories in supply chain management); when the research issue is still emerging and there is little empirical data available; or when the aim is to critically problematize established phenomena.

Notably, the guidance available to scholars on designing and developing high-quality conceptual research is relatively scant in comparison to the guidance available for empirical studies (Xin, Tribe and Chambers, 2013). For some authors this is not problematic because conceptual research ‘is not defined by a method but by a topic’ (Leuzinger-Bohleber and Fischmann, 2007, p. 1375), and should be concerned more with issues of knowing and being than with method (Schwandt, 1994). However, for others, conceptual studies seek to create robust new knowledge which is built from carefully selected and interpreted sources of information. Conceptual studies should therefore similarly be bound by accepted and expected methodological requirements related to explicating and justifying key decisions and processes within the conceptual research design (Jaakkola, 2020, p. 19). In so doing, it is suggested that conceptual studies can counter common assumptions and criticisms that conceptual studies are ‘devoid of deeper scholarship’ (Hirschheim, 2008, p.434).

Delineating specific processes associated with conceptual research designs can be challenging because there can be ‘considerable variation in the scope, content and structure’ of conceptual articles (2010, p. 5). For example, Yadav (2010) shows that conceptual articles can take a variety of forms. These include developing theoretical syntheses, such as systematic reviews; developing completely new ideas, such as a novel concept; or advocating for attention on an under-researched domain. MacInnis (2011, pp. 137–138) provides an additional typology of conceptual studies which include a range of conceptual processes for the purposes of *envisioning* new ideas, *relating* ideas, *explicating* ideas, or *debating* ideas.

In the supply chain context, Fawcett *et al.* (2014, p.3) admitted that ‘given the breadth of forms and the exploratory nature of conceptual research...it is impossible to provide a precise trail guide for crafting conceptual research’. Nonetheless, they suggested that there are four key issues that generally affect the ultimate credibility and contribution of a conceptual article. These include, clearly classifying and highlight the contribution (by referring to known typologies of conceptual contributions); pushing theoretical boundaries (by either challenging how we currently view the world, or shining a spotlight on what we need to know); writing with precision (for example, providing clear definitions, delimiting the boundaries of the theory, and explaining expected relations) and borrowing theory appropriately (which means verifying that the construct/theory has a similar function in the new setting).

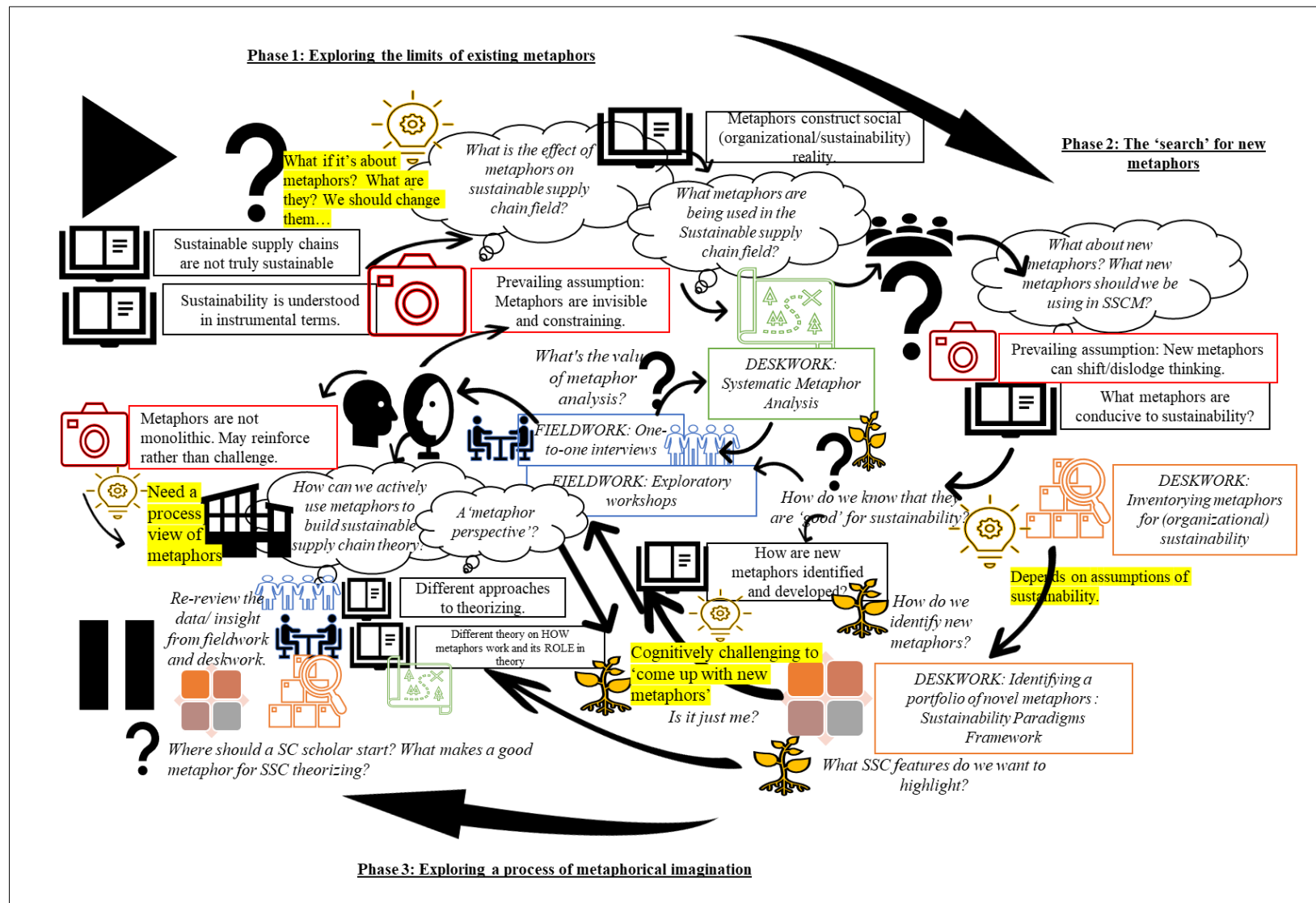
Given that conceptual studies use conceptual ideas and theory in the place of empirical data, one of the key requirements for conceptual studies is to make clear the role and purposes of the theory used in the study (Jaakkola, 2020). This is because a common problem within conceptual studies is that there can be confusion about which theory the research is reasoning about or contributing to, because theory is used as both the *subject* of analysis and the *means* of analysis (Jaakkola, 2020). To solve this problem, Lukka and Vinnari (2014) provided the terminology of ‘domain theory’ and ‘method theory’. They refer to theory which is being used as the subject of analysis, and therefore to which the study seeks to contribute, as domain theory. Theory which is being used as the means of analysis is called the method theory. Domain theory refers to ‘a particular set of knowledge on a substantive topic area situated in a field or domain’, while method theory refers to ‘a meta-level conceptual system for studying the substantive issue(s) of the domain theory at hand’ (Lukka and Vinnari, 2014, p. 1309). This study uses theory related to metaphor and theory development from organization theory and related literatures as the ‘method theory’, which is utilised in the

process of developing knowledge about sustainable supply chain theory development processes (acting as the ‘domain theory’).

This study is as an exploratory conceptual study because the topic of metaphor in sustainable supply chain scholarship has not previously been recognised and therefore the subject area is not fully defined. The study involved three key phases of conceptual research activity. The first two were designed based on the extant literature, in line with the study’s second and third objectives. The final phase emerged from the insights developed from the first two.

To capture the detail of the research activity, including its iterative engagements with theoretical and empirical material, as well its reflections, and evolving assumptions, a rich picture has been developed (Figure 3). Figure 3 is organized around the three key phases of research activity which begin from the top left corner (the ‘Play’ symbol) and proceed clockwise, ending at the bottom left corner (the ‘Pause’ symbol). It captures the interaction of key assumptions, theory, deskwork, and fieldwork that informed the progress of the study and the production of the study’s key knowledge claims. Each of the study’s three research phases are further described in the rest of this section.

Figure 3 A rich picture of the conceptual research activity.



3.3.1. Phase 1: Exploring the limits of existing metaphors.

Phase 1 was characterized by an assumption that predominant metaphors in sustainable supply chain theory were responsible for the limitations in sustainable supply chain theory development. It was therefore characterized by a desire to investigate the constraining role of metaphors for sustainable supply chain scholarship. This phase marked the beginning of the doctoral study and was characterized by a concern to explore and demonstrate the role of metaphor in the construction of the concept of sustainable supply chain generally, and the implications of prevailing metaphoric constructions for the progress of sustainable supply chain scholarship specifically.

The study had originally been triggered in 2016 by calls for ‘thinking differently’ in sustainable supply chain theory and practice. Several conceptual and critical studies in the sustainable supply chain discipline had begun to problematize the dominant discourse in sustainable supply chain theory, as well as its core assumptions (Matthews *et al.*, 2016; Montabon *et al.*, 2016) and predominant research methods (Pagell and Shevchenko, 2014). These studies broadly suggested that predominant assumptions, trends, and methods limited the sustainable supply chain field’s ability to develop knowledge that could lead to truly sustainable (instead of less unsustainable) supply chains (Montabon *et al.*, 2016).

At the same time, an initial review of literature pertaining to sustainability and organizational management revealed that metaphor was being recognised to a greater and lesser degree within several contexts and texts across disciplinary boundaries. For example, metaphors were variously highlighted by a number of sustainability writers as being of central importance to the construction and perpetuation of the sustainability problem (Ehrenfeld, 2003; Larson, 2011; Dryzek, 2013). At the same time it was noted that there is a very established literature on the role of metaphors in organization studies and management and

highlighted the role of metaphors in the construction of organizational concepts (Morgan, 1980; Andriessen and Gubbins, 2009). Moreover, a number of scholars from organization, business and management disciplines were emphasizing the role metaphors for influencing thinking about the relationship between organizations and the natural environment (Audebrand, 2010; Barter and Russell, 2013). The study therefore began with the assumption that metaphors had a significant (and potentially constraining) role to play in the challenges facing sustainable supply chain scholars. This motivated the focused and extended process of exploring the literature from the fields of cognitive linguistics (e.g., Lakoff and Johnson, 1980) as well as organization theory (e.g., Morgan, 1980) regarding the role and importance of metaphor in constructing social and organizational reality, generally, as well as the role of metaphor in thinking about the supply chain sustainability challenge, specifically.

This naturally underpinned a key assumption at this early stage of the study which was that predominant metaphors in sustainable supply chain scholarship – that is, the metaphors used to construct the concepts of supply chain, sustainability and sustainable supply chains – were helping to perpetuate the field’s dominant assumptions about supply chain and sustainability that was limiting the field’s conceptual progression and contribution to knowledge about the achievement of true sustainability. Based on this assumption, a robust, systematic exposure of these metaphors was deemed an important step in highlighting the existence and influence of prevailing metaphors. This was achieved through the method of systematic metaphor analysis.

Systematic Metaphor Analysis

Systematic metaphor analysis is a systematic procedure for the analysis of metaphors in qualitative data (Andriessen and Gubbins, 2009; Praggel jazz Group, 2007; Schmitt, 2005). It is consistent with the assumptions of Conceptual Metaphor Theory as it enables cognitive

structures to be inferred based on a systematic analysis of linguistic metaphors. In line with Andriessen and Gubbins' (2009), who found it to be a useful method for exploring theoretical concepts, the method is used to explore the conceptual metaphors underpinning sustainable supply chain theorizing to further reflect on the limitations of the zeitgeist in sustainable supply chain thinking.

The metaphor analysis procedure was developed based on guidance by Andriessen and Gubbins (2009) and the Pragglejazz Group (2007) and applied to a sample of 44 published academic articles on the topic of 'sustainable supply chain' which were published between 2017-2019 in ABS-ranked SCM and Ethics journals. The sample was limited to articles which were deemed to represent the character of the current discourse of the sustainable supply chain field most usefully. For this reason, the sample was limited to research articles published within quality journals as indicated by the ABS-ranking, and that had been published within the most recent two-year period. The metaphors identified through the systematic metaphor analysis were explored through the lens of conceptual metaphor theory (Lakoff and Johnson, 1980) to deduce the implications of the metaphoric landscape for sustainable supply chain theory development. Further details of the process and results of the systematic metaphor analysis are described in Chapter 5.

Despite the apparent benefits of systematic metaphor analysis (Andriessen and Gubbins, 2009), the method cannot address the question of which new metaphors sustainable supply chain scholars could or should be using to overcome the perceived limitations of dominant metaphors. As has been demonstrated in chapter 2, this is an important scholarly project within metaphor literature. It was also found to be an important question for the sustainable supply chain community, as it was raised through informal encounters with individuals from the sustainable supply chain academic community and in response to presentations of the

ongoing research at the 2018 and 2019 EurOMA Sustainable Operations and Supply Chain Forums.

An intention to propose novel metaphors for the sustainable supply chain community was therefore addressed in the second formal phase of research activity which focused on the question of which new metaphors should replace or complement existing metaphors in the development of sustainable supply chain theory.

3.3.2. Phase 2: The ‘search’ for new metaphors.

Phase 2 focused on identifying new metaphors for sustainable supply chain scholarship. During this phase, the research focus shifted towards the task of identifying new metaphors for stimulating sustainable supply chain theory development. Phase 2 was characterized by a progression from a focus on the argumentation and evidence surrounding the importance of metaphors in the social construction of reality (and therefore in the constructions of extant sustainable supply chain theory), to a focus on leveraging novel metaphors for their value in developing new thinking and new knowledge. This research phase was concerned with the study’s second objective of identifying and proposing new metaphors.

Inventorying existing metaphors

This phase of research began with a desk-based exploration the literature for potential ‘new’ metaphors. As there is a rich array of literature problematizing and proposing existing and new metaphors in sustainability discourse both within and outside of the business, organization and management disciplines, the initial approach involved mining the literature for novel metaphors identified and proposed by other scholars. A range of other studies have explored a variety of metaphors for sustainability, and sustainability related concepts, such as the natural environment, planet Earth, and society, as well as metaphors for sustainable organizations, and the organization-natural environment relationship (Jermier and Forbes,

2016; Jones, 2016) (Jones, 2016). These metaphors were mapped and inventoried as an initial step towards trying to identify and introduce into sustainable supply chain field relevant metaphors. It was assumed that such metaphors might be (as theories have been) borrowed and imported into the sustainable supply chain discipline.

Identifying a portfolio of metaphors

In addition to inventorying the literature for relevant metaphors for or associated with sustainability, a complementary approach was adopted which sought to identify metaphors which highlighted features that were currently under-represented or under-theorized in sustainable supply chain scholarship. This approach was organized around the Sustainability Paradigms Framework (Matthews *et al.*, 2016) which constructs alternative paradigms from which to theorize sustainable supply chains. As the present study is built upon constructionist assumptions and accepts the suggestion that sustainability is an essentially contested concept, it was assumed that no single metaphor could be sufficient for theorizing sustainable supply chains. This is consistent with other scholars who have highlighted the need for a ‘multiple vision’ (Keulartz, 2007). Therefore, the Sustainability Paradigms Framework (Matthews *et al.*, 2016) was used to identify and articulate sustainable supply chain features from alternative paradigmatic perspectives. This guided the identification and selection of new metaphors which were deemed to highlight these features. The process led to the articulation of four novel metaphors for sustainable supply chains which provided the input into the fieldwork activity to engage with the community of sustainable supply chain academics as participative process of identifying and proposing novel metaphors.

Fieldwork – engaging with the community of sustainable supply chain academics.

In addition to the desk-based efforts to identify new metaphors, this phase of research activity also included fieldwork activity that sought to engage directly with the community of

sustainable supply chain academics. Specifically, the fieldwork activity involved engagement with the academic community through two interactive workshops (conducted in February and March 2019) and four one-to-one interviews (conducted in February and March 2020). The details of these activities are described in table 3.

Table 3 An overview of the fieldwork activity.

Field Work Element	Detail	Participants [Unique identifying codes]	
Interactive workshops	Interactive Workshop 1	University of South Wales – 1 hour – March 2019	6 participants
	Interactive Workshop 2	19 th EurOMA Sustainable Operations and Supply Chain Forum – 30 mins – March 2019	Approx. 20 participants.
One-to-one interviews	Interview 1	Extended questionnaire document completed before Skype interview – 1 hour – March 2020	Lecturer-Management [L-Man.]
	Interview 2	Extended questionnaire document completed before Skype interview – 1 hour – March 2020	Senior Lecturer – Operations and Supply Chain Management [SL-O/SCM]
	Interview 3	Extended survey document completed before Skype interview – 1 hour – March 2020	Associate Professor – Supply Management [AP-SM]
	Interview 4	Extended survey document completed before Skype interview – 1 hour – March 2020	Professor – Operations Management [P-OM]

Fieldwork activities were designed around two key concerns – to engage with existing metaphors, and to propose new ones. A key aspect of the fieldwork was to explore academics’ perceptions and suggestions around the introduction of new metaphors for sustainable supply chain scholarship. This was achieved through an interactive process which involved seeking academics’ responses to existing metaphors in sustainable supply chain scholarship (i.e., the metaphors that were identified through the systematic metaphor analysis

in phase 1) as well as seeking academics' responses to new metaphors for sustainable supply chain scholarship i.e., the metaphors that were identified through the desk-based research using the Sustainability Paradigms Framework (Matthews *et al.*, 2016). Academics were also asked to propose their own metaphors. As this represented an inductive and exploratory element of the research, a key concern in designing these activities was to engage with academics who were knowledgeable about and actively engaged in researching and theorizing sustainable supply chains. Further details of these activities are described in chapter 6.

As will be shown in chapter 6, the value of the fieldwork activity ultimately lay in the serendipitous insight it provided into the challenges of engaging with metaphors and metaphoric thinking in sustainable supply chain theorizing. In one respect, the fieldwork re-emphasized the challenges that had been faced through the desk-based process of identifying novel metaphors, as sustainable supply chain academics also found it difficult to identify and propose new metaphors. Additionally, it prompted a process of problematizing original assumptions about how metaphors work to create cognitive insight, and therefore how metaphors can be used to develop sustainable supply chain theory. These reflections are captured and discussed in chapter 6. Together, these encounters catalysed the third distinct research phase of the study, which explored the *processes* of metaphorical imagination for sustainable supply chain theory development.

3.3.3. Phase 3: Exploring the processes of metaphorical imagination.

The third and final research phase was prompted by some of the insights that emerged during phase 2. Phase 3 focused on exploring the process of metaphorical imagination, that is, *how* sustainable supply chain scholars (can) work with metaphors in theorizing activities.

This shift in focus from *what* (new metaphors to use) to *how* (to work with metaphors in supply chain theorizing) is partly explained by the insight, conceptual and empirical data that had been generated through phases 1 and 2. It also coincided with renewed attention on the issue of theory and theory building in (sustainable) supply chain research as the Journal of Supply Chain Management launched a special issue call for papers on novel approaches to supply chain theorizing (Flynn, Pagell and Fugate, 2020). This call built upon longstanding suggestions about the general lack of theory building in the supply chain field (e.g., Carter, 2011; Carter, Rogers and Choi, 2015). In the sustainable supply chain field, researchers had similarly highlighted the field's tendencies towards importing theories from other fields, instead of building novel sustainable supply chain theory (Touboulic and Walker, 2015). More specifically, the discussion had also begun to highlight the extraordinary requirements that the sustainability issue presented for supply chain theorizing (Matthews *et al.*, 2016). Matthews *et al.* (2016) suggested that the complexity of the sustainability challenge means that the development of sustainable supply chain management theory 'will necessarily require a lengthy process of theorizing'. Matthews *et al.* (2016) thus introduced and advocated the method of problematization for sustainable supply chain theorizing, marking a progression in the field's consideration of what theory is, and how theorizing occurs.

The conceptual work during this phase therefore consisted of mapping and synthesizing known approaches to using metaphors in theorizing activities to recognize and demonstrate that the role of metaphor in sustainable supply chain theorizing will necessarily be contingent upon particular perspectives on sustainable supply chains and approaches to theorizing. This work is discussed in chapter 4.

The shift in focus from the question of *what* (new metaphors to use?) to the question of *how* (to work with new metaphors?) was also consolidated during this research phase based on the experiences of the one-to-one interviews with academics. The fieldwork activity had been

central in problematizing original assumptions about the power of metaphor for stimulating change and in revealing the shortcomings in the literature related to how metaphor can be used by scholars in their theorizing activities. This work is discussed in chapters 6 and 7. The phase therefore concluded with a revised emphasis on a process, rather than product, view of metaphor in sustainable supply chain theorizing which prioritized concern for the process of working with metaphors, as opposed to a concern for the creation or identification of any single metaphor, or set of metaphors, for theorizing sustainable supply chains. This work was captured within a paper published in the *Journal of Supply Chain Management* in 2021 (Stephens *et al.*, 2021) and is discussed in chapter 7.

3.4. Research quality.

The strength and relevance of the knowledge claims made by any research study is dependent on the perceived quality of the research study's design, execution, and presentation. The practice of evaluating research is a rich area of literature and ongoing debate, but there is general agreement that any assessment of the quality of a research study should be based on measures that are fit for purpose (Bryman, 2016). This means that the criteria and measures that are used to evaluate a study must be consistent with the study's meta-theoretical assumptions (Guba and Lincoln, 1989). This has led to the perceived need for different quality criteria to be applied according to the research strategy and methods used.

Criteria that are used to evaluate quality within positivistic studies refer to *truthfulness*, which concerns the extent to which the study accurately and objectively represents the empirical world. Truthfulness can be measured through constructs including *reliability* and *validity* (Bryman, 2004). Reliability concerns the issue of whether the results of the study can be repeated. This concerns the stability of the measures used, and the replicability of the study, which also concerns the authors' fastidious description of research procedures. Validity

reflects concern with the integrity of the conclusions drawn, meaning that the measures used are deemed valid for exploring the construct, that the relationships proposed are valid, that the results are generalizable beyond the specific research context, and that the research concern and findings are applicable to everyday settings (Bryman, 2004).

In contrast, given that the assumptions of constructionism reject the notion of a mind-independent reality, a central measure of quality in constructionist studies is that the research remains true to the experiences of the researched (Turnbull, 2002). Rigour in constructionist terms therefore partly refers to the assurance that the study presents an authentic account of the voices of the researched. Turnbull (2002, p. 321) refers to this as ‘authenticity’ and ‘genuineness’. It has also been referred to as ‘*credibility*’ as one part of the broader qualitative quality criteria of ‘trustworthiness’ (Bryman, 2016). Credibility refers to a concern that the account is a true representation of the social reality as it is encountered by the research participants. Trustworthiness was proposed by Lincoln and Guba (1985) and Guba and Lincoln (1994) in rejection of the positivistic criteria of truthfulness and has become a key measure of quality for qualitative researchers. Other elements of trustworthiness include *transferability*, which is concerned that the research contains a sufficiently detailed description of reality to allow readers to determine the relevance of the study’s findings in another social milieu; *dependability*, which is concerned that there is a possibility for auditing the study to establish that proper procedures have been followed; and *confirmability*, which is concerned that the researcher demonstrates that personal values and pre-existing ideas have not biased the interpretation (Bryman, 2004).

Although the present study is qualitative, trustworthiness was not considered to be singularly useful as a measure of quality of the present study. One of the key reasons for this is the fact that the study is conceptual, and therefore cannot rely on statements of adherence to

traditional standards related to the data collection and analysis processes in demonstrating the quality of the study (Jaakkola, 2020). An alternative measure of research quality was therefore chosen.

3.4.1. Convincingness as a measure of research quality.

Convincingness was developed by Golden-Biddle and Locke (1993) as a multi-criteria framework of quality concerned with the question of how researchers write to ‘persuade their audiences that their findings are worth paying attention to, worth taking into account’ (Golden-Biddle and Locke, 1993, p. 597). An important element of convincingness is that, unlike trustworthiness, it more explicitly acknowledges a subjectivist view of knowledge which recognises that knowledge does not exist objectively through a research text. That means that the research text cannot speak for itself in terms of the quality of the findings (Golden-Biddle and Locke, 1993). Convincingness thus emphasises how a research text conveys the message of the study, as well as the nature of the message itself. They suggest that this is an important consideration for making readers ‘sit up and take notice’ (Davis, 1971, p.310), and thus for being able to influence knowledge development in the field. Specifically, Golden-Biddle and Locke (1993) suggest that convincingness is achieved through three dimensions - authenticity, plausibility, and criticality. These dimensions capture and combine the principles and criteria of quality in conceptual and constructionist studies that were deemed most pertinent to the present study.

Authenticity refers to the researcher’s ability to demonstrate their close connection with the ‘everyday life encountered by the researcher in the field setting’ (Golden-Biddle and Locke, 1993, p. 599). This reflects the traditional qualitative concerns of representing the truth of social reality as it is experienced by its research participants and aligns with key concerns of ‘trustworthiness’. Given that this is a predominantly conceptual study, authenticity here

predominantly reflects concern for making transparent the detail of the conceptual processes and research activity that underpinned the study, including the reflections, changing assumptions, and timelines associated with key activities. Some of the key value that is likely to be derived from this study is the demonstration of authentic encounters and challenges that can be faced when working with metaphor. This included an authentic perspective on the limitations of existing theory for guiding sustainable supply chain scholars in efforts to work with metaphor in theorizing.

It should also be noted that the rigour of the conceptualisation processes was further enhanced by engagement with leading authorities on the topic of metaphor and the metaphoric perspective on the construction of sustainability. In particular, the research was supported by email correspondences and Skype conversations with Professor Joep Cornelissen (Professor of Corporate Communication and Management at Erasmus University, Rotterdam); Professor Daan Andriessen (Professor in Methodology of Practical Research at University of Applied Sciences, Utrecht); Professor Arran Stubbe (Professor of Ecological Linguistics at University of Gloucestershire); and Professor Brendon Larson, Professor in the School of Environment, Resources and Sustainability, at University of Waterloo). These interactions facilitated sense-checking the interpretation and application of key ideas, as well as the identification of additional literature and perspectives that deepened the conceptual reflections.

The remaining two criteria of convincingness, *plausibility* and *criticality*, emphasize the extent to which the study drives and achieves knowledge advancement, particularly in terms of its ability to provoke problematization through the denial rather than confirmation of pre-conceived ideas (Davis, 1971; Alvesson and Sandberg, 2011). This aligns with a stream of literature which has noted that influential theories are not necessarily those that are

considered ‘true’ (Davis, 1971; Alvesson and Sandberg, 2011), and can be achieved through balancing efforts to align with readers’ expectations (that is, establishing plausibility) as well as challenging readers’ expectations (establishing criticality).

The plausibility dimension of convincingness refers to the ability to ensure the findings ‘make sense’ to the reader, wherever they are ‘coming from’ (Golden-Biddle and Locke, 1993, p.600). Formal and informal engagement with the community of sustainable supply chain academics – through workshops and interviews, as well as presentations of the research at various conferences – therefore enhances the plausibility of the study. These encounters were important in facilitating ongoing reflection in a way that enabled a plausible recontextualization of metaphoric approaches to theory development within the specific sustainable supply chain context. The depictions and descriptions of the research process in this chapter make transparent how ongoing reflection informed the progress of the research to maximise the relevance of the research and its findings for the sustainable supply chain community. Additionally, through depictions of these encounters through the rich picture (Figure 3) in this chapter, as well as the presentations of the findings in chapters 4, 5 and 6 (for example by including direct quotations from academic participants, and reflective discussions), readers will be able to see connections with their own experiences.

These strategies are also important for achieving criticality in this study, which is concerned with challenging readers’ assumptions about theory development processes in extant sustainable supply chain scholarship through re-framing metaphor in terms of ‘a metaphor perspective’. *Criticality* refers to the ability to ‘activate the readers to re-examine assumptions that underly their work’ (Golden-Biddle and Locke, 1993, p. 600). The issue of *criticality* is considered particularly pertinent for the present study’s epistemological thrust. Central to the achievement of quality in this study is the study’s ability to provoke readers to

reflect upon assumptions related to the general influence of metaphoric conceptualizations and metaphorical imagination on sustainable supply chain theorizing. This has partly driven decisions related to the presentation of detailed illustrations of conceptual metaphors identified through the systematic metaphor analysis (presented in chapter 5).

The assumptions of convincingness have guided decisions on the design of the study and presentation of this thesis. Quality in this study therefore refers to the study's ability to demonstrate the rigour of the conceptual knowledge generation processes that underpinned the study's core knowledge claims (authenticity), to connect with the existing conversations and requirements within the sustainable supply chain community (plausibility), and to energise interest in a metaphor perspective as a mechanism by which sustainable supply chain scholars can challenge their own assumptions (criticality).

3.5. Ethicality in research.

Ethical considerations are closely linked with the issue of research quality as they concern the integrity of the piece of research and its findings (Bryman, 2004). Ethical considerations can be broad ranging, but have been summarized as relating to two key issues: the protection of the integrity of the research community, and the protection of research participants (Bell and Bryman, 2007). The protection of the integrity of the research community has been described as relating to avoiding deception about the nature of the research, declaring affiliations, sources of funding or conflicts of interest, ensuring honest and transparent communication about the research, and avoiding misleading or false reporting of the findings (Easterby-Smith, Thorpe and Jackson, 2015). The protection of research participants has been described as relating to avoiding harm and respecting the dignity of the research participants, protecting the privacy of the participants, ensuring the confidentiality of research data, and ensuring informed consent (Bryman, 2004; Easterby-Smith, Thorpe and Jackson, 2015)

The present study is predominantly conceptual but draws upon interaction with members of the sustainable supply chain academic community through workshops and interviews to complement and authenticate the conceptual work. Interaction with research participants occurred through two exploratory workshops and four one-to-one interviews. These were conducted in standard professional academic settings, which were both physical and virtual. The key ethical issues therefore related to achieving informed consent from the research participants and assuring confidentiality through data storage and the subsequent presentation of the findings. Ethical approval was given by the University of South Wales Faculty Research Ethics Committee.

Informed consent was achieved through verbal and written communication about the aims of the research. In the context of the exploratory workshops, this was communicated verbally, and no personal data was collected. In the context of the interviews, participants were provided with an information sheet, and were asked to indicate consent through a signed consent form (Appendix 2). Participant responses which have been included within the thesis are identified through unique codes that assure anonymity of the research participants. All data has been stored securely and used solely for the purpose of the present research study.

3.6. Conclusion.

The aim of this chapter was to discuss the methodological approach used within the present study. The study is rooted within the constructionist tradition and adopts a conceptual research design. The quality of the study has been assured through the adoption of the quality criteria of convincingness. This has been shown to be a relevant framework that helps to frame and operationalize concerns for quality that are most pertinent for the constructionist, conceptual underpinnings of the present study.

Chapter 4 presents the first of four chapters that present and discuss the study's conceptual work and key knowledge claims.

Chapter 4 – Operationalizing a metaphor perspective in sustainable supply chain theory: The Approaches to Metaphor framework.

4.1. Introduction.

This thesis frames the issue of metaphor in sustainable supply chain theory in terms of taking ‘a metaphor perspective’. Chapter 2 developed a definition of a ‘metaphor perspective’ as ‘a general recognition of the central role that metaphoric conceptualization plays in constructing, understanding and exploring every day and scientific phenomena’. It suggested that framing metaphor in this way helps to better demonstrate the relevance of and opportunities for thinking about metaphor within the sustainable supply chain field. A metaphor perspective also provides an account of metaphor which is broad enough to accommodate and highlight the existence of an array of perspectives on the role of metaphor in the development of theory.

This chapter seeks to begin to operationalize a ‘metaphor perspective’ in sustainable supply chain theory development. Central to these efforts is deeper recognition that metaphor is a multi-faceted concept, whose role and function within organizational theory development has been perceived in a variety of ways. Chapter 2 has introduced this idea by alluding to the simultaneously liberating and constraining capabilities of metaphor. In line with the study’s first objective, this chapter aims to further demonstrate the *scope* of metaphor and its *relevance* for the sustainable supply chain field by synthesising existing accounts of metaphor in organizational theory development and recontextualizing them within the sustainable supply chain context.

Specifically, this chapter develops a new framework – the Approaches to Metaphor framework – which positions known approaches to metaphor in the organization theory field in terms of alternative approaches to sustainable supply chain theorizing. In so doing, it

depicts a metaphoric research agenda that is broader and more nuanced than that depicted by existing literature on metaphor in the supply chain field. It also provides a means to position the work depicted in subsequent chapters of this thesis as examples of the approaches to metaphor depicted in the framework.

The remainder of this chapter is therefore organized as follows. Section 4.2 outlines existing typologies of metaphor from organization theory and discusses the limitations of these typologies for the sustainable supply chain field. Section 4.3 discusses the issue of alternative approaches to theory development which has prompted the need for a new framework for metaphor for sustainable supply chain theorists. Section 4.4. introduces and describes the Approaches to Metaphor framework for theorizing sustainable supply chains. Section 4.5. discusses the implications of the framework for sustainable supply chain theory. Section 4.6 summarizes the key conclusions of the chapter and introduces Chapter 5.

4.2. Existing typologies of metaphor.

Previous typologies by Tsoukas (1993), Inns (2002) and Cornelissen and Durand (2014) offer useful accounts of the wide variety of ways in which metaphor has been approached within organizational analysis and theory. Tsoukas' (1993) typology identified three alternative perspectives on metaphor. The first perspective views metaphors 'as a way of thinking' which is exemplified by Morgan's (1980, 1997) influential view. The second perspective views metaphors 'as potentially ideological distortions' (Tinker, 1986) which takes a more critical perspective on the need to use metaphors to reveal social inequality and to highlight opportunities for emancipation. Finally, the third perspective views metaphors 'as dispensable literary devices'. This view is exemplified by Pinder and Bourgeois (1982) and the belief that a separate literal language is available and preferable in scientific contexts.

Tsoukas' (1993) typology is particularly notable for highlighting the extent to which alternative perspectives on the inevitability and value of metaphor in organizational research and theory rest on alternative assumptions about the objectivity and independence of social reality as well as about the mechanisms of knowledge creation. These inform alternative perspectives about the role of metaphor in organizational scholars' relationships and interaction with that reality.

A separate effort by Inns (2002) captured a wider variety of six perspectives on how metaphors have been used by organizational scholars. Her typology particularly highlights the view of metaphor as a 'tool' which can be 'used' by scholars for a variety of different purposes across theory and research – as a teaching tool, a qualitative research tool, a generative tool for creative thinking, a hegemonic tool to influence perception and interpretation, and a tool for questioning embedded assumptions (Inns, 2002, p. 308). These demonstrate instrumental approaches to working with a metaphor which are broadly consistent with the principles and assumptions reflected in the first two of Tsoukas' (1993) categories – 'metaphors as a way of thinking' and 'as potential ideological distortions'.

More recently, Cornelissen and Durand (2014) described three types of metaphors in terms of the amount and nature of the theoretical raw material they provide the organizational theorist. *Heuristic* metaphors are early catalysts of thought that prompt new perspectives on organizations, but which may be quickly lost or forgotten in subsequent theoretical constructions. *Causal* metaphors provide relational structures that can be considered analogous with the structures of the phenomenon under study and therefore help to define causal relationships in organizational phenomena. *Constitutive* metaphors are metaphors that represent rich packages of vocabulary, assumptions and causal structures that can be imported and come to constitute an influential perspective and research programme.

All three of these typologies offer useful frameworks for categorizing how scholars have approached metaphor in organizational research and theory. However, they are deemed to be limited in their value for sustainable supply chain theorists. The core weakness of these typologies relates to their failure to explicitly account for debates about different ways in which *theory* can and should be developed.

In the case of the typologies by Inns (2002) and Tsoukas (1993) this is explained by the fact that these typologies are first and foremost studies of metaphor, within the broad context of organizational analysis and theory. Therefore, discussion of theorizing and theory is relatively implicit (Tsoukas, 1993) or only a part of the discussion (Inns, 2002). Inns (2002) included empirical research-based uses of metaphor in organizational research and analysis as well as theoretical uses, but provided little explicit discussion of their role in theory development. Meanwhile, Tsoukas (1993) does account for alternative views on the development of knowledge in a field, but these are organized along philosophical lines. He acknowledges that the ‘metaphors as a way of thinking’ category is aligned with a pluralistic perspective on theorizing in which theorists seek to read organizations through a range of metaphor ‘spectacles’ (Tsoukas, 1993). He shows that this contrasts with the ‘metaphors as dispensable literary devices’ category which is aligned with a more positivist view of theorizing which seeks truth, and conceptual closure. This perspective has underpinned criticisms of metaphor because they ‘do not have enough clear content to be falsifiable’ (Pinder and Bourgeois, 1982, p. 643).

In contrast to Inns (2002) and Tsoukas (1993), the typology by Cornelissen and Durand (2014) is first and foremost a study of theory development (not metaphor). It therefore deals with metaphor alongside other approaches, such as counterfactual reasoning, in their investigation into the way in which major organization theories have been developed. In their typology of metaphor, they are explicit in articulating metaphor at different *stages* of theory

development (*heuristic* for theory building, and *causal* for theoretical elaboration). However, this still implies a relatively general and uncontested view of theory development that does not explicitly account for the requirements for the development of *interesting* theory (Davis, 1971). Specifically, recent accounts have articulated theory development in terms of the alternative approaches of ‘gap-filling’ and ‘problematization’ (Alvesson and Sandberg, 2011). These are important emergent discussions within sustainable supply chain theorizing (Matthews *et al.*, 2016) which therefore must be considered when recontextualizing metaphor within the sustainable supply chain field. They are explored in the next section.

4.3. Approaches to developing sustainable supply chain theory.

As has been introduced in chapter 2, the development of sustainable supply chain theory has become a rich point of discussion within the sustainable supply chain field. Although some authors have found the extent of atheoretical work to be ‘alarming’ (Touboulic and Walker, 2015, p. 20-21), reviews of the theoretical landscape generally reveal positive trends in the use of theory to explore sustainable supply chain phenomena (Carter and Easton, 2011; Carter *et al.*, 2019). This is important because theory makes empirical research ‘more than just data dredging’ as it enables researchers to make sense of empirical realities (Handfield and Melnyk, 1998). This has therefore prompted calls for more use of alternative theoretical lenses to explain sustainable supply chain phenomena.

However, this trend also signals a net inflow of theory into the field from neighbouring fields. In general, there is seen to be problem with the level of development of indigenous supply chain and sustainable supply chain theory, particularly the development of theory that can be deemed interesting and influential to scholars outside of the field (Hoffman and Georg, 2012). This is notable because supply chain scholars acknowledge theory as a marker of disciplinary maturity (Harland *et al.*, 2006). There are therefore calls for more theory building

in the supply chain field (Carter, Rogers and Choi, 2015; Flynn, Pagell and Fugate, 2020), and useful resources exist that provide procedural frameworks to guide theory development processes. For example, Handfield and Melnyk (1998) provide a detailed primer of the theory building process in Operations Management.

However, recent work has suggested that theorizing sustainability requires approaches to theorizing that are different to the norm in the supply chain field. As sustainability is a morally complex, uncertain, and essentially contested issue (Norgaard, 1989; Sneddon, Howarth and Norgaard, 2006; Ehrenfeld, 2008), Gladwin, Kennelly, and Krause (1995, p. 881) suggest that ‘little theoretical progress can be made...on unquestioned grounds’. Recent calls for an ecocentric paradigm in sustainable supply chain theorizing indicate that the field’s failure to question its own anthropocentric and instrumental assumptions has meant that the field is failing to contribute to wider discussions about the achievement of global planetary sustainability (Matthews *et al.*, 2016; Montabon, Pagell and Wu, 2016). Theory development in the sustainable supply chain field therefore requires approaches which not only ‘extend, justify, prove and defend’ the assumptions in the field (Grant, 2001, p. 10963), but which also challenge and deny embedded assumptions (Alvesson and Sandberg, 2011).

Alvesson and Sandberg (2011, 2013) distinguished between the traditional approach to the development of theory which seeks to ‘fill gaps’ which accept and reinforce existing assumptions, and alternative ‘problematization’ approaches which challenge the assumptions upon which extant theory has been built. Traditional approaches to management theorizing tend towards the gap-spotting and filling approach to theorizing (Alvesson and Sandberg, 2013). In contrast, problematization is a method of generating research questions based on questioning established conventions in a field (Alvesson and Sandberg, 2011). The authors

suggest that such problematization is a ‘central ingredient’ in developing ‘interesting and influential’ theories (Alvesson and Sandberg, 2011, p. 247).

Scholars have offered extensive prescriptions of the content of a ‘complete’ theory (Dubin, 1978; Whetten, 1989, p. 490) and characteristics of a ‘good’ theory (Wacker, 1998). The problematization approach builds upon a body of work which counters the orthodox view that theories which are influential are theories which are seen to be ‘true’ (Davis, 1971). In contrast to this orthodox view, it has been suggested that theories which can be classed as notable or famous are actually distinguishable by the fact that they challenge or deny rather than affirm existing assumptions in the field (Davis, 1971).

The problematization approach is incipient within sustainable supply chain theorizing. Recent work has either explicitly employed the problematization approach to challenge predominant assumptions in sustainable supply chain theory (Matthews *et al.*, 2016), or more implicitly problematized theory in the field by calling for new paradigms (Pagell and Shevchenko, 2014; Montabon *et al.*, 2016). Considering this, for the purposes of recontextualizing wider literatures on metaphor for the benefit of sustainable supply chain theorizing, it is deemed necessary to do so in terms of these alternative *approaches* to theory development.

A new framework of metaphor which explicitly includes a dimension which accounts for metaphor in terms of both ‘gap-spotting’ and ‘problematization’ approaches to theory development is therefore important for operationalizing metaphor within the sustainable supply chain field. The next section represents such an attempt in the form of the Approaches to Metaphor framework.

4.4. The Approaches to Metaphor framework.

This section introduces and develops a newly devised Approaches to Metaphor framework which operationalizes a ‘metaphor perspective’ in sustainable supply chain theory development by capturing the range of alternative perspectives and approaches to working with metaphor in theory development. The discussion in section 4.3 introduced the theory development dimension which is the first of two dimensions that construct the framework. The theory development dimension of the Approaches to Metaphor framework is anchored by ‘gap-filling’ and ‘problematization’ perspectives on theory development.

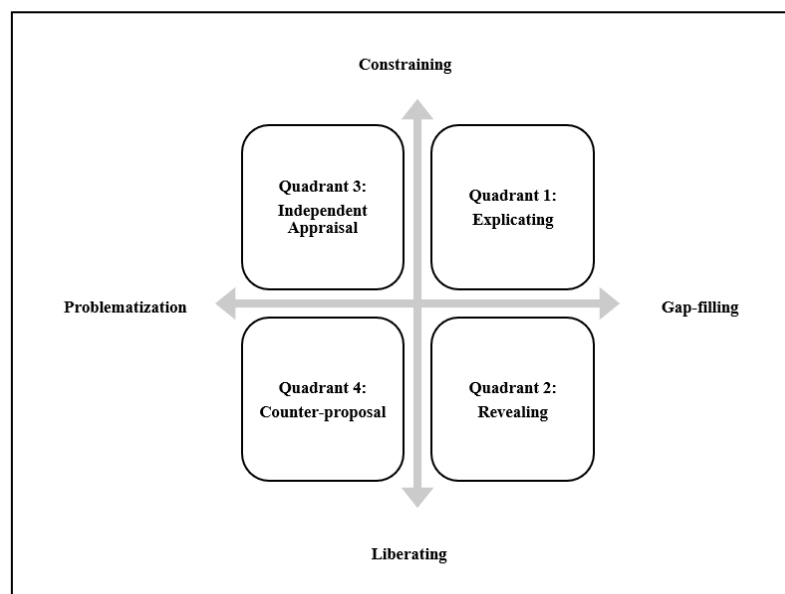
The second dimension of the framework is the metaphor capabilities dimension. A core theme of the literature on metaphor as discussed in Chapter 2 is that metaphors are paradoxical in both highlighting and hiding features of a target phenomenon. Metaphor is therefore seen as having the capability to constrain knowledge and theory development by trapping scholars into a way of seeing and therefore a way of not seeing (Morgan, 1997). At the same time, novel metaphors can be liberating by providing new ways of seeing (Chia, 1996). These capabilities of metaphor have been central to discussions about the role of metaphor both in organizational theory development and the challenge of progressing sustainability. In the organizational theory literature, these capabilities have been captured within a key analytical distinction which differentiates between live and dead metaphors (Tsoukas, 1991).

Live metaphors align with the liberating capabilities of metaphor. Live metaphors are novel metaphors which are easily recognized as metaphors. They are deemed to have value for organizational theorizing because they provide fresh ways of seeing (Cornelissen, 2006b) and are tools for what Morgan (1993) calls *imaginization*. By contrast, dead metaphors are metaphors which are established, culturally sanctioned and so familiar that they are commonly understood as literal rather than metaphorical terms (Tsoukas, 1991, p. 568). They

therefore invoke little (if any) conscious recognition of their metaphorical origins (Peattie, 2005). In the current context of theory development, the common analytical distinction between live and dead metaphors is framed as metaphor's alternative capabilities for theory development. This is captured in the metaphor capabilities dimension of the Approaches to Metaphor framework, which is anchored by 'constraining' and 'liberating' capabilities of metaphor.

Combining the metaphor capabilities dimension and theory development dimension yields four quadrants that represent alternative approaches to working with metaphor in theory development (Figure 4).

Figure 4 The Approaches to Metaphor framework.



Each of the quadrants reflect differing perceptions, as well as levels of emphasis and concern, relating to the perceived capabilities of metaphor, as well as different emphases on alternative approaches to theorization. This influences the research questions, research concerns and research activities that characterize the nature of the work with metaphor in theory development in each quadrant. In the next sections, the four quadrants are introduced and

described in turn, before the framework is discussed in terms of its implications for sustainable supply chain theory development.

Quadrant 1: Explicating

The Explicating quadrant is broadly characterized by an emphasis on the constraining capability of metaphor and the gap-filling approach to theorizing. Based on these emphases, some work in this quadrant has sought to enhance a field's recognition of metaphor as a general conceptual resource and to raise levels of conscious recognition of metaphors more specifically to achieve greater conceptual consensus (and therefore theoretical consolidation). As there is broad agreement that dead metaphors are less valuable for generating new theoretical insight, the perspective that is adopted in work in this quadrant emphasizes efforts to identify and expose the metaphoric roots of theoretical perspectives. Work in this quadrant emphasizes the extent to which metaphors have underpinned and shaped theoretical development in the field to date and highlights that these metaphors might not be consciously recognized as metaphors.

One of the key preoccupations of this quadrant is therefore to advocate for a 'metaphor perspective,' to highlight and illustrate *that* metaphors underpin theory and to identify/expose what those metaphors are. To do this requires recourse to another analytical distinction, which distinguishes between deep/root or surface metaphors (Schon, 1979). This can be seen as akin to the difference between conceptual metaphors and linguistic metaphors in conceptual metaphor theory (Lakoff and Johnson, 1980b).

Deep metaphors determine the key features of the objective being examined and form the basis on which surface level metaphors are formed. For example, the anthropomorphic metaphor of organizations as a human entity is a deep metaphor that enables surface metaphoric expressions, such as organizational *intelligence*, organizational *behaviour*, and

organizational *learning*, which are based on the deep metaphor despite the word ‘human’ not being used (Schon, 1979; Grant, 2001). As this quadrant is characterised by a preponderance towards a gap-filling perspective on theorizing, there is less of an emphasis on changing those root metaphors. Work with metaphor in this quadrant is therefore characterised by efforts to better understand the metaphorical roots of theory and to explain theoretical perspectives in terms of their root metaphors.

This is exemplified in the work of Andriessen and Gubbins (2009), who sought to explain and reconcile competing definitions of relationships in the social capital literature. The authors systematically analysed key source material in the social capital literature to identify the metaphors that have underpinned and guided the conceptual development of the concept of relationships. They demonstrated that alternative metaphoric constructions of relationships informed different pathways of theory development leading to alternative and competing theories of social capital - namely, weak tie theory, social resource theory, and structural hole theory. Andriessen and Gubbins (2009) argue that insights into the metaphorical roots of key concepts are useful for ameliorating critical debates about a proliferation of definitions in a field because it reminds scholars that alternative definitions describe *metaphorical constructions of reality* rather than reality itself, and therefore neither can be considered right nor wrong in theorizing efforts.

In a similar vein, Ketokivi, Mantere and Cornelissen (2017) suggest that recognition of metaphoric roots is important for better evaluating the argumentation that underpins scholars’ theoretical claims. Their emphasis is on the importance of recognizing the metaphoric nature of theoretical explanations and arguments because of its implications for the progress of theory. The recognition of metaphors is important because it is based on a particular

metaphoric assumption about organizational phenomena that hypotheses are deemed logical and are justified.

Quadrant 2: Revealing

Quadrant 2 is named after the phrase used by Tsoukas (1993) to articulate his perception on the value of metaphor for theoretical development. Tsoukas (1993, p. 334) suggested that ‘to treat all metaphors as if they were nothing else but mere literary illustrations ignores the possibility of using metaphorical thinking in such a way as to eventually *reveal* generic properties [emphasis added]’ of the phenomenon of interest. He said ‘to disregard the importance of metaphorical thinking means ...to ignore injudiciously the knowledge which has been painstakingly accumulated across a variety of scientific fields, which could give us some clues regarding our own theoretical questions’ (Tsoukas, 1993, p. 334). This perspective exemplifies this quadrant’s concern to use metaphors to access and leverage knowledge from other fields. Like the Explicating quadrant, it leans towards the gap-filling perspective on theory development, but it differs from the Explicating quadrant because it places greater emphasis on the liberating potential of metaphor.

Within this quadrant are scholars who view metaphor as a precursor to theory on the basis that they provide potential models for theorizing a specific phenomenon (Bacharach, 1989). Work with metaphor in this quadrant is therefore characterized by using metaphor as a tool for extending knowledge based on the acceptance (rather than rejection) of existing knowledge and assumptions about the phenomenon. This has led to work which has sought to more explicitly and consciously extend or leverage an existing metaphor for its theoretical insight. For example, Chen *et al.* (2013) worked explicitly with the metaphor of marital divorce to develop conjectures about strategic buyer-supplier dissolution. This was based on

the established metaphoric representation within the supply chain, marketing and purchasing literature of strategic buyer-supplier relationships as a *marriage* (Levitt, 1983).

Additionally, this has been well-demonstrated by Tate *et al.* (2019) who explicitly invoked the metaphor of root fungus networks to generate specific conjectures about sustainability in a business ecosystem. The authors built on the implicit image of the supply chain as a natural ecosystem in line with the principles of biomimicry. Through comparing the current state of business ecosystems with root fungus networks they theorized supply chain sustainability in terms of a balance of supply chain actors highlighting the need for more participants in the roles of ‘scavengers’ and ‘decomposers’ as well as an underlying infrastructure which can help to manage information and material flows in a more integrated manner.

Additionally, Schoeneborn, Blaschke, and Kaufmann (2013) sought to fill gaps in existing knowledge related to deficits in organizational learning and memory by accepting the existing deep metaphor of organization as human entity and working with a novel anthropomorphic metaphor – organizational insomnia.

Quadrant 3: Independent Appraisal

This quadrant is characterized by emphases on the constraining capabilities of metaphor and the problematization perspective on theory development. One of the key concerns of work in this quadrant therefore has been the suitability of existing metaphors for future theory development. At the problematization end of the theory development dimension, this quadrant is characterized by efforts to critique, probe, and challenge, rather than accept, the existing knowledge base (and the metaphors on which it based) (Alvesson and Sandberg, 2011).

A key characteristic of this quadrant’s perspective on metaphor is that metaphors are fundamentally partial (Lakoff and Johnson, 1980a; Morgan, 1980, 2011) which means that

they hide features of the phenomenon that are not present in the metaphor. As metaphors work by aiding understanding by suggesting how a phenomenon is like something else, it also distracts attention away from consideration of how a phenomenon is not (or should not be) like the metaphor. This can become problematic as some metaphors can become normalised and taken for granted as ‘the’ construction of the phenomena. Jermier and Forbes (2016, p.1004) highlighted this issue through the illustrative experiences of scientists Rene Descartes and Isaac Newton who they suggest ‘became victims of the metaphor of a clockwork universe because as the metaphor ceased to be apparent to them, they lost their ability to see it as merely one perspective among many possible perspectives’. In ceasing to be apparent to them, the metaphor can be considered to have ‘died’.

Different perspectives on the implications of dead metaphors for theory development is therefore an important distinction between the Explicating and Independent Appraisal quadrants, which both lean towards the constraining end of the metaphor capabilities dimension. While the Explicating quadrant is generally characterized by the view that the constraining capability of dead metaphors is a neutral issue in so far as it simply means the absence of knowledge generation, the Independent Appraisal quadrant is characterized by the view that the constraining capability of dead metaphors is problematic because it actively constrains the creation of alternative perspectives.

For some working within the Independent Appraisal quadrant, this has resulted in efforts to show how dominant metaphoric constructions in organizational theory are mis-aligned with and fail to adequately capture the empirical reality. For example, McCabe (2016, p. 954) suggests that dominant metaphors of organization imply that organizational reality is ‘order, rationality, stability and manageability’ while the organizational reality experienced by many is actually characterized by ‘absurdity, irrationality, uncertainty, and disorder’.

Work with metaphor within this quadrant also emphasizes values as a key dimension of metaphors, referring to the accepted goals, motivations, and ideals associated with the metaphor (Hunt and Menon, 1995). Scholars in this quadrant therefore also emphasize metaphors as value-laden constructions. They see this as particularly important in the context of dead metaphors where the residual values of a formerly live metaphor can live on even though the metaphor has died. This has been particularly important for scholars working in the fields of business and the natural environment and organizational sustainability as numerous authors have raised concerns about the predominance of certain metaphors which reflect assumptions and values that are incongruent with the requirements of sustainability (Gladwin *et al.*, 1995; Barter and Russell, 2013; Audebrand, 2010; Milne *et al.*, 2016; Jermier and Forbes, 2016; Srivastava, 2007; Gladwin *et al.*, 2007).

For others working within this quadrant, assumptions related to the constraining capabilities of metaphor are cast in rhetorical and discursive terms, meaning that metaphors are also seen as a tool which is deployed to support a particular discourse or agenda. This is best exemplified by critical approaches to metaphor analysis (Charteris-Black, 2004). It also has general implications for the transfer of meaning in communications between social spheres – whether that be between scientists and the lay public (Larson, 2011), between organizations and their stakeholders (Milne, Kearins and Walton, 2006), or between organization and management theorists and practitioners (Ramsay and Caldwell, 2004). For example, Milne, Kearins and Walton (2006) problematized the metaphoric construction of sustainability as a journey. They suggest that seeing sustainability as a journey which organizations are already ‘on’ distracts from discussion of the true nature of the destination, and therefore enables and sanctions incremental rather than radical sustainable change. Adopting a critical discursive perspective, they also suggest that the journey metaphor is consciously employed by organizations in order to create an image of serious engagement with the challenges of

sustainable development and to avoid criticism of non-action, while creating conditions in which to protect corporate interests (Banerjee, 2012).

For Larson (2011), metaphors used by scientists to communicate the meaning and implications of their work risk perpetuating values which have been responsible for socio-ecological challenges in the first place. For example, he highlights issues with the metaphor of DNA barcoding which has been used to communicate the meaning of work to create genetic typologies. A DNA barcode is a ‘short DNA sequence used to discriminate among species’ (Larson, 2011, p. 134). It draws on the idea of barcoding products in a supermarket and thus risks reinforcing consumerist values and strengthening an already dominant instrumental and anthropocentric view which sees the facets of the natural environment as commodities to be managed and consumed. According to Larson (2011) this metaphor therefore hides and distracts away from consideration of nature in intrinsic terms.

Quadrant 4: Counterproposal

Like the Independent Appraisal quadrant, the Counterproposal quadrant is characterized by an emphasis on the problematization view of theory development, but it also emphasises the liberating capabilities of metaphors. Work in this quadrant is therefore best characterized by the proposition of novel metaphors which challenge, rather than extend, existing metaphoric constructions.

Novel / live metaphors are best able to stimulate new thinking because they are unfamiliar and can shock the listener to understand or interpret a phenomenon in a new way. Common with the Independent Appraisal quadrant, this quadrant emphasizes that metaphors are partial, which drives an emphasis on proposing (multiple) new metaphors to highlight theoretically salient features of organizational phenomena that may be hidden by dominant metaphors. Importantly, the driver behind the proposition of new metaphors in this quadrant is the desire

to challenge assumptions that have driven theoretical development. This is in contrast to the proposition of novel metaphors within the Revealing quadrant which is driven by a desire to use metaphors to extend knowledge within the existing paradigm or research programme (as with the example of Organizational Insomnia) (Kuhn, 2012; Ketokivi, Mantere and Cornelissen, 2017)

For example, on the back of his suggestion that organizational reality is actually absurd rather than rational, as is the predominant assumption in organization theory, McCabe (2016) proposed the novel metaphor of organizations as Wonderland (based on Lewis Carroll's work of fantasy fiction). Similarly, Jones (2016) proposed the metaphor of the biophilic organization to highlight organizations' bio-cultural connections to counter dominant suggestions of bio-cultural disconnection that are served by dominant metaphors. Perhaps most famously, Morgan (1986; 1997; 2006) proposed six novel metaphors of organizations (as brain, as culture, as political system, as psychic prison, as flux and transformation, and as instrument of domination) which are variously rooted in competing sociological paradigms (Burrell and Morgan, 2001)

This quadrant is therefore also characterized by a view of the value of metaphors as resources that can facilitate creativity to 'de-ossify' thought and support the task of systematically re-examining taken for granted concepts (Chia, 1996, p. 129). This is exemplified in the study by Jermier and Forbes (2016) which experimented with alternative metaphoric images to 'see' organizations differently in order to theorize sustainable organizational water management. Similarly, Jones (2013) referred to his new metaphor of the biophilic organization as a de-familiarizing metaphor, to imagine a bio-cultural connection within universities.

4.5. Operationalizing a metaphor perspective in sustainable supply chain theory development through the Approaches to Metaphor framework.

The Approaches to Metaphor framework begins to operationalize a metaphor perspective within sustainable supply chain theory development. This means that it strives to develop a general recognition of the central role that metaphoric conceptualization plays in constructing, understanding, and exploring every day and scientific phenomena within the sustainable supply chain field by demonstrating the variety of available perspectives and approaches to working with metaphor. This section discusses the framework further and explores its implications for sustainable supply chain theory development to make it a useful conceptual resource for sustainable supply chain scholars. Before doing so, it is useful to highlight two points.

Firstly, it is important to note that the quadrants should be viewed as complementary rather than incommensurate. This is indicated by studies which reflect perspectives from different quadrants of the Approaches framework. For example, a common occurrence is to combine perspectives from the Explicating and Independent Appraisal quadrants in one study. There are several examples of studies which first identify and explicate existing metaphors (in line with perspectives in the Explicating quadrant) and then problematize those metaphors (in line with the Independent Appraisal quadrant) (e.g., Audebrand, 2010; Milne *et al.*, 2013). Another common occurrence is the combination of perspectives from the Independent Appraisal and Counterproposal quadrants, as authors problematize the limits of existing metaphors and then propose alternatives (Jermier and Forbes, 2011; McCabe, 2016). As the framework operationalizes a metaphor perspective which fundamentally accepts the *value* of metaphoric representation, the alternative quadrants represent different scholarly emphases on the nature of the role of metaphor rather than fundamentally contrasting views on the fundamental value of metaphor.

Secondly, the Approaches to Metaphor framework serves to draw into focus the limited nature of the extant discussion of metaphor within supply chain literature. Viewing existing work on metaphor in supply chain theory through the Approaches to Metaphor framework suggests that the richness of metaphor theory has not been fully appreciated in the supply chain field. The dominant work on metaphor in supply chain theory can be mapped to the Revealing quadrant (quadrant 2) of the Approaches to Metaphor framework. The perspective is exemplified by the work of Chen *et al.* (2013) and Garud and Kotha (1994) who have sought to work systematically with metaphors that have only been casually invoked within the field. A relevant question from the perspective of the Revealing quadrant is, therefore, what existing casually invoked metaphors may be usefully leveraged for a formal metaphoric transfer process? Although not referring explicitly to the metaphoric transfer process, Tate *et al.* (2019) explicitly drew on the metaphor of the *root fungus network* to theorize sustainability in the business ecosystem, building on an existing metaphorical view as a complex ecosystem (Carter, Rogers and Choi, 2015).

The Approaches to Metaphor framework therefore identifies additional approaches to working with metaphor in sustainable supply chain theory development. An alternative approach that may be particularly relevant for the sustainable supply chain field is the Counterproposal quadrant which emphasizes a concern for sustainable supply chain scholars to identify novel metaphors that enable scholars to ‘see’ supply chains anew. This stimulates scholars to actively experiment with alternative images of supply chains for the purposes of ‘dis-mantling conventional wisdom’ related to supply chain management (Chia, 1996, p. 129) as well as for the purposes of generating new and interesting (Davis, 1971) theoretical conjectures (Cornelissen and Durand, 2014). Again, although not explicitly referring to metaphor theory, Wieland’s (2021) work is a good example of an effort to confront and dismantle existing visions of supply chain through the development of new conjectures based

on the proposition of new metaphors. He proposed the metaphor of dancing as a way of confronting existing static and reductionist assumptions of supply chain management.

According to perspectives within the Independent Appraisal quadrant, these alternative images should be carefully considered in light of the socio-cultural biases which may constrain and promote the proposal of those alternative metaphors (Lakoff and Johnson, 1980a; Larson, 2011). From the perspective of the Independent Appraisal quadrant, the concern for sustainable supply chain scholars would be whether the metaphors currently in use are appropriate for the future development of sustainable supply chain theory. A relevant research question from the perspective of the Independent Appraisal perspective, is therefore, what are the implications of dominant metaphors for sustainable supply chain theory development?

These efforts will be well-served by additional approaches within the Explicating quadrant. From the perspective of the Explicating quadrant, the sustainable supply chain field is fertile ground for explicit consideration of the field's metaphoric landscape to establish the predominant metaphoric representations upon which sustainable supply chain theory is being developed. While the field has been subject to numerous systematic reviews of the literature to chart the field's predominant areas of concern, methodological approaches, industrial contexts, and theoretical lenses (Carter and Rogers, 2008; Ashby, Leat and Hudson-Smith, 2012; Ahi and Searcy, 2013; Touboulic and Walker, 2015; Carter *et al.*, 2019), there has been no similar level of attention on metaphoric conceptualizations. Considering the view of metaphor as mediating the relationship between paradigmatic assumptions and puzzle-solving research approaches, this may be considered a notable gap.

A relevant research question from the perspective of the Explicating quadrant is, therefore, what are the metaphors-in-use in sustainable supply chain theory? It has been suggested that

sustainable supply chain has inherited rationalist baggage from its parent field (Touboulic and Walker, 2016, p. 31) which has resulted in ‘norms’ associated with assumptions, measures and methods which are not fully suited to the task of creating truly sustainable supply chains (Pagell and Shevchenko, 2014). Specifically, perhaps this may include the inheritance of metaphoric constructions of supply chains, which may be more or less problematic for theorizing supply chains in the sustainability context.

4.6. Conclusion.

This chapter has begun to operationalize a metaphor perspective in sustainable supply chain theory by developing the Approaches to Metaphor framework. The Approaches to Metaphor framework synthesises the rich debates and perspectives on metaphor from wider literature and recontextualizes it for the sustainable supply chain field by placing more explicit emphasis on alternative approaches to theory development.

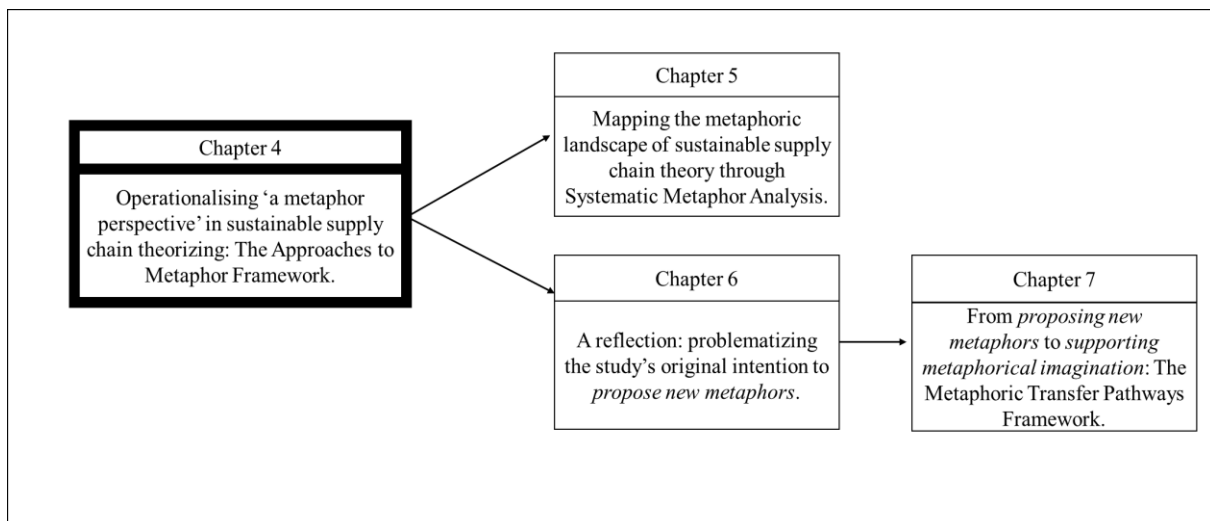
The framework has demonstrated that the dominant approach to metaphor taken in the supply chain literature is captured in the Revealing quadrant (quadrant 2). This certainly offers opportunity for working with metaphor in sustainable supply chain theory development, as exemplified by the study by Tate *et al.* (2019), but the approaches captured within the Independent Appraisal (quadrant 3), Counterproposal (quadrant 4) and Explicating (quadrant 1) quadrants in the Approaches to Metaphor framework also represent important additional approaches to working with metaphor for the benefit of sustainable supply chain theory development.

The importance of developing theory through approaches which challenge as well as accept dominant assumptions has become an important point of discussion for the development of interesting sustainable supply chain theory. The Approaches to Metaphor framework therefore operationalizes a metaphor perspective in the sustainable supply chain field by

typologizing approaches to metaphor within a broader research agenda of working with metaphor in sustainable supply chain theory development, taking into explicit account the problematization as well as gap-filling approaches to theory development.

The work depicted in the following chapters (chapters 5, 6 and 7) can be usefully positioned in terms of this framework. Figure 5 depicts the relationships between the four chapters that discuss the study’s key conceptual work and knowledge claims. The bold outline depicts the position of the current discussion (chapter 4) in relation to the thesis’ subsequent chapters.

Figure 5 Relationship between the four chapters that depict the study’s key conceptual work and knowledge claims.



The next chapter, Chapter 5, reports on an inquiry that is grounded in the assumptions of the *constraining* capabilities of the Approaches to Metaphor framework, and therefore the assumptions of the Explicating (quadrant 1) and Independent Appraisal (quadrant 3) quadrants. In line with the study’s second objective, it seeks *to critically engage with the metaphoric influences on sustainable supply chain theory development*.

Chapters 6 and 7 represent work that is grounded in the assumption of the *liberating* capabilities of metaphor. It presents work associated with the study’s third objective – *to harness the liberating potential of metaphor for the benefit of sustainable supply chain theory*

development. In line with studies within the Counterproposal quadrant (quadrant 4) of the Approaches to Metaphor framework, the study originally sought to propose new metaphors to counter existing metaphors within sustainable supply chain theory. However, as has been mentioned in the Introduction, efforts to do so revealed insight that challenged this approach. Therefore, chapter 6 instead provides a reflection on these encounters, and discusses the logic of taking the research in a new direction. Chapter 6 therefore sets the scene for chapter 7 which addresses the objective of harnessing the liberating potential of metaphor in a new more appropriate way.

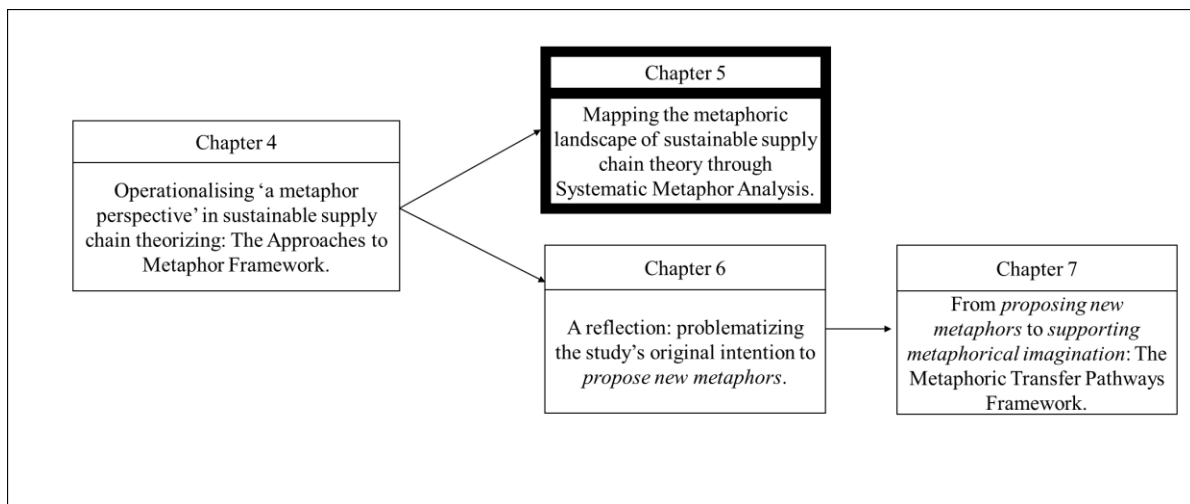
Chapter 5 – Exploring the metaphoric landscape of sustainable supply chain theory.

5.1. Introduction.

The aim of this chapter is to achieve the second objective of the study which is *to critically engage with the metaphoric influences on sustainable supply chain theory development*. To achieve that objective, this chapter presents the results of an inquiry which uses conceptual metaphor theory and the method of systematic metaphor analysis to expose and explore the metaphors informing sustainable supply chain theory.

This inquiry is consistent with approaches to metaphor represented by the Explicating and Independent Appraisal quadrants of the Approaches to Metaphor framework (Figure 4) that was presented in Chapter 4. Figure 6 depicts the position of the ensuing discussion in relation to the thesis' previous and subsequent chapters.

Figure 6 Relationship between the four chapters that depict the study's key conceptual work and knowledge claims - Chapter 5.



In addition to exposing the metaphors in sustainable supply chain theory (in line with the concerns of the Explicating quadrant), this chapter is also concerned with critically engaging with them (in line with the Independent Appraisal quadrant). The Independent Appraisal quadrant emphasizes the partial nature of metaphors. In the context of theory development

this means that metaphors may logically sanction certain theoretical and research concerns while distracting scholars away from others. The Independent Appraisal quadrant therefore also assumes that problematizing a field's root metaphors is a valuable, if not central, part of a field's theory development (Morgan, 1980; Alvesson and Sandberg, 2011).

Systematic metaphor analysis is one method that may be used to support efforts to identify the metaphors in a field (Andriessen and Gubbins, 2009). It is a procedure for the analysis of metaphors in qualitative data which is consistent with the assumptions of conceptual metaphor theory (Schmitt, 2005). It was originally developed in the field of cognitive linguistics and has been applied to the analysis of metaphors in organization theory and management studies (Cornelissen, Kafouros and Lock, 2005; Andriessen and Gubbins, 2009), as well as wider social sciences (Rees, Knight and Wilkinson, 2007). It is used in this inquiry to help to expose the metaphors in sustainable supply chain theory in order to consider their potential implications for sustainable supply chain theory development.

The remainder of the chapter is organized as follows. Section 5.2 discusses perspectives on the constraining capabilities of metaphors and introduces the general method of systematic metaphor analysis for identifying metaphors. Section 5.3. discusses the specific benefits of systematic metaphor analysis for sustainable supply chain theory development and describes the specific procedure that was applied in the present inquiry. Section 5.4 discusses the results of the systematic metaphor analysis by illustrating the metaphorical influences within sustainable supply chain theory and exploring potential implications through the lens of conceptual metaphor theory. Section 5.5 discusses the significance of the inquiry and explains the progression to Chapter 6.

5.2. The constraining capabilities of certain types of metaphors.

Over the years, myriad analytical distinctions have been developed among organizational scholars seeking to progress different viewpoints on the role and uses of metaphor within organizational research and theory (Schon, 1979; Alvesson, 1993; Black, 1993; Tsoukas, 1993; Dunford and Palmer, 1996; Grant and Osrick, 1996a; Morgan, 1996; Inns, 2002; Cornelissen and Durand, 2014). In the context of theory development, scholars have tended to focus on types of metaphors that are known for their ability to generate new insight and keep thought moving in order to build new theory. The typology of ‘live’ versus ‘dead’ metaphors has thus been particularly influential, with scholars predominantly emphasizing the value of ‘live’ (also known as ‘novel’) metaphors for their ability to surprise and shock scholars into seeing organizational phenomena anew (Cornelissen, Kafouros and Lock, 2005; Ketokivi, Mantere and Cornelissen, 2017).

In the context of problematization approaches to theory development, live and novel metaphors are useful as ‘confrontational’ metaphors (Alvesson and Sandberg, 2011). By potentially contrasting with existing metaphors, a novel metaphor may challenge scholars to problematize their own perspectives and assumptions. This is in line with the assumptions of the Counterproposal quadrant of the Approaches to Metaphor framework (which emphasizes the liberating, rather than constraining potential of metaphors). However, in line with the assumptions of the Independent Appraisal quadrant of the Approaches to Metaphor framework, which emphasizes the constraining capabilities of metaphor, emphasis should also be placed on existing metaphors which may have become conventionalized in a field.

The problematization approach to theory development also draws attention to another distinction, which distinguishes between *root* metaphorical images and *surface level* metaphorical language (Schon, 1979; Alvesson, 1993; Alvesson and Sandberg, 2011).

Surface level metaphorical language refers to metaphorical language and concepts that exist in text and talk, which scholars may use within their scholarship and analysis. These emerge from underlying root metaphorical images which provide a common and accepted metaphorical representation of a phenomenon. For example, supply chain *efficiency* is a linguistic metaphor which emerges from an underlying root metaphor of machine.

Alvesson and Sandberg (2011, p. 255) described root metaphors as ‘broader images of a particular subject matter’. They make up ‘the ultimate presuppositions or frames of references for discourse on the world or a domain within it’ (Audebrand, 2010, p. 415). Cornelissen, Kafouros and Lock (2005, p. 1548) suggest that root metaphors therefore ‘filter and structure a researcher’s perceptions of the subject of study’. Such root metaphors can underpin and unite a particular school of thought and therefore progress a cohesive research programme (Morgan, 1980; Ketokivi, Mantere and Cornelissen, 2017).

However, from a problematization perspective, root metaphors are of concern because of the assumptions or features of the phenomenon of interest that are omitted from the metaphor and therefore may be marginalized in the field. Problematization therefore requires those root metaphors to be identified and exposed for what theoretically salient issues or assumptions they may *hide* in the phenomenon of interest (Alvesson and Sandberg, 2011). This distinction bears similarity to the relation between conceptual metaphors and metaphoric linguistic expressions in conceptual metaphor theory (Lakoff and Johnson, 1980).

Conceptual Metaphor Theory also introduces an even more fundamental perspective on the constraining capabilities of metaphor by positioning metaphoric conceptualizations as central to our everyday conceptualization of the world. In so doing, Conceptual Metaphor Theory emphasizes that individual metaphors used in organizational theorizing do not occur by chance, but rather can be traced back to underlying *primary metaphors* (Andriessen and

Gubbins, 2009). Linked with the principle of embodiment, primary metaphors are metaphors which connect subjective experience and judgement with sensorimotor experiences (Lakoff and Johnson, 1999, p. 49). This means that they enable understanding an abstract experience in terms of a much more direct physical experience (e.g., AFFECTION IS WARMTH) (Gibbs Jr., 2006). Drawing on physical experience to make sense of new and complex phenomena is a resource-saving technique for interpreting the world (Schmitt, 2005).

Primary metaphors are also seen as ‘atomic components’ of more complex metaphorical imagery that supports higher order reasoning (Lakoff and Johnson, 1999, p. 49). An example of how primary metaphors are combined to enable more complex metaphorical thought and expressions is in the example of the ‘glass ceiling’ metaphor. This complex metaphor combines the primary metaphors of GOOD IS UP and SEEING IS KNOWING (Grady, 1997). Through a shared understanding of these two primary metaphors, it becomes possible to understand the meaning of the more complex ‘glass ceiling’ metaphor as relating to discrimination which hinders promotions and career progress among minority groups.

Primary metaphors have similarly been shown to be central to the construction of more complex root metaphorical representations of organizations (Cornelissen and Kafouros, 2008b). For example, Cornelissen and Kafouros (2008b) suggest that the complex metaphor of organizations as a complex adaptive system is produced through the interaction of more fundamental primary metaphors, including ACTIONS ARE SELF-PROPELLED MOTIONS (which sees organizational actions as movement through space), RELATIONSHIPS ARE ENCLOSURES (which sees interactions between organizations as happening inside an enclosed space) and CHANGE IS MOTION (which sees change as movement down a path). For Cornelissen and Kafouros (2008), the importance of recognizing primary metaphors as atomic components of complex metaphors in organization theory relates to its value for theory building. They

suggest that it gives scholars access to the atomic components which can be dismantled and reconstituted in novel ways.

However, from a perspective which emphasizes the constraining capabilities of metaphors, sustainability scholars have also highlighted primary metaphors for their role in constructing, perpetuating, and therefore constraining basic assumptions related to sustainability (Romaine, 1996; Painter-Morland, Demuijnck and Ornati, 2017). In particular, Painter-Morland, Demuijnck and Ornati (2017) highlight the predominance of the metaphor of WELLBEING IS WEALTH within business sustainability discourse. This metaphor conceptualizes the moral issue of *wellbeing* in terms of the concept of *wealth*.

This moral metaphor is one of the most basic cognitive structures for morality. It conceptualizes happiness and other associations of wellbeing as a valuable commodity that we can have more or less of, earn, deserve, or lose (Lakoff and Johnson, 1999, p. 292). It leads to the assumption that to decrease someone's wellbeing means one has, for example, a moral *debt* and therefore 'owes' that person an apology (Painter-Morland, Demuijnck and Ornati, 2017). This metaphor underpins logical arguments that the 'right' thing to do is to increase wellbeing by increasing wealth, while the wrong thing to do is to decrease wellbeing by decreasing wealth.

However, a predominantly materialistic and calculative understanding of wealth has shaped predominant normative judgements of wellbeing in predominantly economic terms. Painter-Morland, Demuijnck and Ornati (2017) therefore suggest that the prevalence of this metaphoric conceptualization of wellbeing may explain scholars' observations of the dominance of the 'business case' cognitive frame within business discourse on sustainability (e.g., Hahn *et al.*, 2014). In so doing, they suggest that metaphors are not simply neutral analytical frameworks through which scientific phenomena are observed and analysed but

may be imbued with normative judgements by virtue of a scholar's primary sensorimotor experiences.

These assumptions stimulate the need for a method to identify those metaphors for the purposes of problematizing the assumptions and implications that may be associated with them. In line with the cognitive linguistic perspective, which assumes the unavoidability of metaphors in structuring perspectives on reality, an approach which has been derived in the field of cognitive linguistics is appropriate. The next section thus introduces and explores the method of systematic metaphor analysis.

5.2.1. A systematic metaphor analysis method for identifying metaphors.

Cognitive linguists have developed a method for the systematic identification of metaphors (Schmitt, 2005; Pragglejazz Group, 2007) which has subsequently been applied for the study of metaphoric concepts within organization theory (Cornelissen, Kafouros and Lock, 2005; Andriessen, 2006; Andriessen and Gubbins, 2009). Schmitt (2005) outlined a systematic metaphor analysis procedure which could act as a 'workable system' for reconstructing metaphors. His work is rooted in the assumptions of conceptual metaphor theory and cognitive perspectives on metaphor, which assumes that metaphor is a 'cognitive process that links cognitive conceptualization with the specific use of language' (Cornelissen, Kafouros and Lock, 2005, p. 1556). From this perspective, it is possible to infer conceptual knowledge based on the analysis of systematic patterns of linguistic structures (Cornelissen, Kafouros and Lock, 2005). Thus, through the systematic metaphor analysis procedure, Schmitt (2005, pp. 368–369) sought to offer 'an approach that allows a systematic reflection of the metaphors in which, and through which, we perceive, speak, think and act'.

Organization scholars have similarly assumed that linguistic metaphors – metaphors used in speech and text - reflect cognitively fundamental meanings about organizations and related

concepts (Cornelissen, Kafouros and Lock, 2005). They have therefore similarly assumed that linguistic metaphors act as evidence of underlying root metaphorical images which can thus be traced and inferred through a systematic procedure (Cornelissen, Kafouros and Lock, 2005). Organization scholars have therefore applied the principles of systematic metaphor analysis to study the metaphoric representations of *organizations* themselves (Cornelissen, Kafouros and Lock, 2005) as well as more specific organizational concepts of *relationships* (Andriessen and Gubbins, 2009) and *knowledge* (Andriessen, 2006).

For example, Andriessen (2006) used the systematic metaphor analysis procedure to expose the metaphorical nature of intellectual capital. He believed this was an important exercise because a failure to recognize its metaphorical nature was leading knowledge management scholars to ‘jump to conclusions’ as a result of taking certain metaphors ‘too literally’ (Andriessen, 2006, p. 106). In a separate study, Andriessen and Gubbins (2009) applied the procedure to the concept of *relationships* in the context of social capital theorizing in order to explain and resolve disagreements over competing definitions of social capital. The authors thus demonstrated the multiple root metaphors that conceptualized the concept of *relationships* and suggested that competing definitions of social capital are the result of alternative metaphoric conceptualizations of *relationships*.

The systematic metaphor analysis procedure consists of two major stages of activity. The first stage relates to the identification of linguistic metaphors related to a phenomenon of interest in a chosen text or sample of texts. These are the metaphors that are directly accessible in the language of the text. The second stage relates to identifying the source domains of the linguistic metaphors in order to construct the underlying root metaphors. The source domain is the domain of experience in which a term is originally or conventionally employed (Cornelissen, Kafouros and Lock, 2005). For example, the linguistic metaphor ‘tier’ (as in *supply chain tier*) is conventionally employed in the context of physical structures and

architecture (the source domain), and therefore informs the reconstruction of the root metaphor of a SUPPLY CHAIN IS A STRUCTURE.

A further conceptual resource that has been used in conjunction with Schmitt's (2005) systematic metaphor analysis procedure is the Metaphor Identification Procedure (MIP) (e.g., Andriessen and Gubbins, 2009). A multi-disciplinary group of metaphor scholars known as the Pragglejazz Group (2007) developed the Metaphor Identification Procedure (MIP) to help scholars to establish more rigorously whether a particular linguistic term can accurately be described as metaphorical. This was prompted by the need to counter scholars' tendencies to identify metaphors through intuition alone.

The MIP naturally supports the first major stage of the systematic metaphor analysis which focuses on the identification of linguistic metaphors (Pragglejazz Group, 2007). To classify a term or phrase as metaphorical or not, the MIP involves three key stages. The first stage is to determine the meaning of a potentially metaphoric term or phrase in context. The second stage is to determine if that potential metaphor has a more basic contemporary meaning in other contexts. Basic meanings are meanings which are generally more concrete, which means that what they evoke is easier to imagine, see, hear, feel, smell or taste and are related to bodily action. More basic meanings are also generally more precise, or historically older. A dictionary may be used to aid this element of the process (Pragglejazz Group, 2007b; Krennmayr, 2008). If the term or phrase does have a more basic or contemporary meaning in other contexts than the given context, the third and final stage of the MIP is to contrast the basic meaning of the term/phrase with its meaning in context. If the meanings can be contrasted, but the contextual meaning can be understood in comparison with the basic meaning, then the term can be marked as metaphorical.

For example, the meaning of the phrase *supply chain tiers* refers to organizations that undertake different types of activities at different stages of an operational process. The basic meaning of ‘tier’ refers to one of several rows or layers of something with each one at a different height (Macmillan Education, 2007, p. 1566). The contextual meaning of tier in the supply chain context can be contrasted with the basic meaning of tier, facilitating understanding of the meaning of the metaphorical phrase, *supply chain tiers*. Therefore, the term *tier* can be classed as metaphorical. Once the linguistic metaphor has been identified as metaphorical using the MIP, the final stage of the systematic metaphor analysis procedure is to identify the source domain from which the linguistic metaphor is sourced and to identify the underlying root metaphorical image. The next section discusses the relevance of this procedure for sustainable supply chain theory development.

5.3. Operationalizing the Independent Appraisal quadrant in sustainable supply chain theory using systematic metaphor analysis.

The systematic metaphor analysis procedure is considered a useful procedure for operationalizing a metaphor perspective in sustainable supply chain theory for several reasons.

Firstly, the systematic metaphor analysis provides a method for gaining access to the cognitively fundamental meanings of the concepts of *sustainability* and *supply chain* within the sustainable supply chain field, which are central to the development of sustainable supply chain theory. Regarding sustainability, this is important because sustainability is widely agreed to be an essentially contested, complex and uncertain issue (Norgaard, 1989; Ehrenfeld, 2008) which has been subject to multiple competing interpretations. According to Matthews *et al.* (2016, p. 82), the contested nature of the concept of sustainability has been repressed in sustainable supply chain theory. As a method to gauge cognitively fundamental meaning, or tacit belief structures (Painter-Morland, Demuijnck and Ornati, 2017), systematic

metaphor analysis therefore provides a means to explore and expose how sustainability is conceptualized within the sustainable supply chain field.

Regarding conceptualizations of *supply chain*, this is important because the sustainable supply chain field has been seen to be limited by its development as a sub-set of the pre-existing and longstanding field of supply chain management. This development is apparent from definitions which conceptually construct sustainable supply chains as the integration of the sustainability concept within the pre-existing framework of supply chain. For example, Wittstruck and Teuteberg (2012, p. 142) defined sustainable supply chain management as ‘an *extension* to the traditional concept of supply chain management by *adding* environmental and social/ethical aspects [emphasis added]’. Pagell and Shevchenko (2014) also suggest that current sustainable supply chain theory and research are heavily influenced (and limited) by the use of dominant approaches in the supply chain field. Similar observations have been made by Touboulic and Walker (2015, 2016) who describe the field of sustainable supply chain management as having inherited research practices from its parent fields of Operations Management and Supply Chain Management. Systematic metaphor analysis is therefore deemed a useful method by which to further explore these assumptions through a metaphor lens.

Finally, the MIP’s focus on accurately identifying whether a term is being used metaphorically is particularly important in the context of enabling scholars to identify conventionalized linguistic metaphors terms to which scholars may have become habituated. Sustainable supply chain theory is likely to be characterized by dead and dormant, rather than live, metaphors (Ramsay and Caldwell, 2004), but such conventionalized metaphors are likely to be invisible to sustainable supply chain scholars which may make the identification of metaphors by intuition alone more challenging and less convincing.

The method of systematic metaphor analysis therefore provides a formal method which can sensitize sustainable supply chain scholars to the metaphorical nature of the familiar terminology and concepts that they use. Specifically, it provides a formal procedure for reconnecting the linguistic metaphors used in theorists' speech and writing with their source domains, thereby revealing the extent to which, and how, the field's central concepts are metaphorically structured. Importantly, the procedure also provides rigour and transparency in the analysis which is comparable with other methods which sustainable supply chain scholars have used to take stock of and inform the progress of sustainable supply chain theory, such as the method of systematic literature review (Tranfield, Denyer and Smart, 2003).

Based on these observations, and in line with the assumptions of the Independent Appraisal quadrant of the Approaches to Metaphor framework (Figure 4), systematic metaphor analysis is adopted as a relevant method which can help to expose the root metaphors – that is, cognitively fundamental meanings - for concepts which are at the heart of sustainable supply chain theory. Combined with the assumptions of conceptual metaphor theory, it serves as a method to understand what metaphors inform sustainable supply chain theorizing, and to consider how those metaphors may be potentially constraining sustainable supply chain theory development.

5.3.1. Applying the systematic metaphor analysis procedure to sustainable supply chain theory.

To identify the metaphors underpinning sustainable supply chain theory, a systematic metaphor analysis was conducted on a sample of published academic articles which can be considered representative of current sustainable supply chain theory. The sample was constructed from peer-reviewed research articles which have been published between 2017-2019 in relevant English-language journals listed in the Association of Business Schools

(ABS) (2018) journal ranking. The ABS ranking is an accepted indicator for journal quality and impact, meaning that the articles selected for this study could offer a relevant representation of sustainable supply chain theory and thus a useful picture of the metaphors currently used in sustainable supply chain theory.

The journals listed in table 4 were identified as influential theoretical and empirical journals representing published work in the field. The list was also informed through cross-referencing with the journals selected by other systematic reviews of the literature in the field (Carter and Rogers, 2008; Carter and Easton, 2011; Fahimnia, Sarkis and Davarzani, 2015; Touboulic and Walker, 2015). The journals chosen included supply chain-related journals, as well as sustainability and ethics related journals which are known to publish supply chain-related work.

Within each journal, appropriate articles were identified through a keyword search of article titles using the search string ‘sustainab*’ AND ‘supply chain’. A focus on article titles limited the sample to articles that were directly concerned with sustainable supply chain. Calls for papers and introductions to special issues were eliminated to focus on metaphors that were used in the context of published accounts of formal research inquiries. The sample consisted of 44 papers (listed in appendix 1). The sample was collected in 2019 and was restricted to articles published in the previous years to provide a snapshot of contemporary sustainable supply chain theory and current the metaphors in use.

Table 4 Journals from which sample of articles was constructed.

Supply Chain Management Journals	Sustainability/Ethics Journals
<i>International Journal of Operations and Production Management</i>	<i>Journal of Business Ethics</i>
<i>Supply Chain Management: An International Journal</i>	<i>Business Strategy and The Environment</i>
<i>Journal of Supply Chain Management</i>	<i>Journal of Industrial Ecology</i>
<i>International Journal of Production Economics</i>	<i>Corporate Social Responsibility and</i>

*International Journal of Physical Distribution
and Logistics Management*

International Journal of Logistics Management

*International Journal of Productivity and
Performance Management*

Once the sample was constructed, each article in the sample was analysed in line with the two key stages of systematic metaphor analysis (Schmitt, 2005). These two key stages were broken down into more detailed steps to record all decisions. Each of the key steps are described below and detailed in Table 5.

In line with the first stage of Schmitt's (2005) procedure, a computer aided search identified all potential linguistic metaphors within each text. The search included linguistic metaphors associated with the target domains of supply chain, sustainability, and sustainable supply chain. First, potential linguistic metaphors associated with the term '*supply chain*' were identified. Then, potential linguistic metaphors associated with the terms '*sustainability*', '*society/social*', '*environment/nature*' were identified. During these searches, any specific metaphors related to '*sustainable supply chain*' that had not already been captured in the previous two searches were also noted.

Each of these searches focused on words or phrases that specifically included the relevant terms (*supply chain, sustainability, society/social, environment/nature*), such as *configure supply chains* or *supply chain tiers*. It also included additional words (verbs, nouns, and adjectives) that were related to the target terms and found within the same sentence, such as '*supply chains are undeveloped*' or '*longer part of the supply chain*'. Records were also kept of additional related words/phrases (verbs, nouns, and adjectives) that were determined to be related to the target terms within the sentence or surrounding sentences (one preceding, one following) but which did not explicitly use the specific terms, such as *supply base, flow back,*

inter-connected organizations, upstream and downstream. All words / phrases identified were recorded in an Excel spreadsheet (Steps 1-2 in table 5).

All terms/phrases identified were considered to be *potential* linguistic metaphors and then were subjected to the Metaphor Identification Procedure (Pragglejazz Group, 2007) in order to judge whether they were *actual* linguistic metaphors (steps 3-5 in table 5). Briefly, this consisted of establishing the meaning of a term in context (step 3), determining if it has a more basic meaning in other contexts (step 4), and establishing whether the contextual meaning contrasts with the basic meaning but can be understood in comparison with it (step 5). To facilitate step 4 (to determine if a term has a more basic meaning), two additional resources were used. These were the Macmillan English Dictionary for Advanced Learners (Macmillan Education, 2007) and the Online Etymology Dictionary (Online Etymology Dictionary, 2021) which is a source of information about the etymological roots of words. All decisions related to the acceptance or rejection of the metaphorical nature of a word / phrase associated with the target domains were recorded in the Excel spreadsheet (step 5 in table 5).

The second stage of the process involved identifying the source domains from which the linguistic metaphors are sourced and reconstructing the resultant root images (step 6 in table 5). The use of the Macmillan dictionary (Macmillan Education, 2007) and Online Etymology Dictionary (Online Etymology Dictionary, 2021) also facilitated these efforts to keep as closely as possible to the basic meanings of identified words/phrases. Additionally, in line with the approach taken by Cornelissen, Kafouros and Lock (2005), published lists of conceptual metaphors were also used to facilitate the determination of source domains in order to enhance the validity of the categorizations of root metaphors (Lakoff and Johnson, 1980b, 1999; Lakoff, Espenson and Schwartz, 1991; Morgan, 1997; Cornelissen, Kafouros and Lock, 2005; Andriessen and Gubbins, 2009).

The final stage of the analysis involved developing an integrated picture of metaphorical conceptualizations of sustainable supply chain through mapping, synthesizing, and integrating the metaphors identified for the relevant target concepts (supply chain, sustainability, environment, and society). To facilitate this, relevant notes were captured throughout the process (step 7 in table 5).

Table 5 Snapshot of Excel template used for systematic metaphor analysis procedure.

STAGE 1 – Identify linguistic metaphor and determine if it is metaphorical using the MIP.					STAGE 2 – Identify the Source Domain	(Additional notetaking)
STEP 1 Record here the target domain-related phrase taken from text	STEP 2 Identify the specific word/phrase that might be metaphorical	STEP 3 Identify the meaning of the word/phrase in context	STEP 4 Identify if the word/phrase has a more basic meaning outside of this context.	STEP 5 Decide if the word/phrase is metaphorical	STEP 6 Identify the root category from which the linguistic metaphor is sourced	STEP 7 Record any notes on contention, decision-making for subsequent iterations of reflection and categorisation. Capture any notes on connections between concepts.
Phrase taken from the text	Possible Metaphor	Contextual meaning (Contrast contextual meaning of the word with the more basic [historical/concrete] meaning of the word)	Definition (does it have a more basic meaning outside of the context? More concrete/historically older)	Metaphor (Yes/ No)	Source Domain	Notes
<i>Supply chain capabilities</i>	capabilities	In context here this means that a supply chain has procedures/processes/agreements set up to be able to perform in a particular way	The basic meaning is able to do something (Macmillan, p. 211)	Yes	Animate being	
<i>Building supply chains</i>	building	In context this refers to making the managerial changes required to enhance performance of the supply chain in line with a particular performance parameter (sustainability, agility, resilience)	The basic meaning relates to make a building or other large structure by putting its parts together (Macmillan, p.187)	Yes	Architecture	
<i>Modern supply chains</i>	modern	The contextual meaning of this relates to supply chains that exist today in the modern-day PESTLE context.	The basic definition means now existing, relating to the present (Macmillan, p. 964)	No	NA	This adjective is referential and descriptive, rather than metaphoric.
<i>Vertical coordination</i>	vertical	In context this refers to the coordination of organizations involved in processes at different stages of the production process of a product/service for market	The basic meaning of this is standing, pointing, or moving straight up (perpendicular to the ground) (Macmillan, p. 1659)	Yes	Structure	Draws on bodily experience (primary metaphor) associated with gravity giving us an upward-downward orientation.

5.4. The metaphoric landscape of sustainable supply chain.

This section critically engages with the metaphors underpinning sustainable supply chain theory by exploring the results of the systematic metaphor analysis. First, section 5.4.1. illustrates the root metaphors of supply chain, sustainability, and sustainable supply chain through a detailed description of the linguistic metaphors which were identified through the sample of texts. In so doing, it demonstrates how metaphoric conceptualizations make it possible and logical to think about and talk about these concepts in specific, but fundamentally partial, ways. It also suggests ways in which the metaphors of supply chains and sustainability interact and combine to inform metaphoric representations of sustainable supply chains. Second, section 5.4.2. explores how metaphoric conceptualizations may be *constraining* sustainable supply chain theory development. In line with the perspectives outlined in section 5.2, this is achieved from two perspectives. The first perspective considers which theoretically salient issues of sustainability may be hidden by dominant metaphorical representations of sustainable supply chains. This aligns with problematization perspectives (Alvesson and Sandberg, 2011) and may be addressed by adopting an external standard of critique (Alvesson and Sandberg, 2011; Schmitt, 2005). The second perspective considers the values which are perpetuated by dominant metaphorical representations. This may be addressed through recognition of the primary metaphors that inform more complex metaphoric images and which may explain and constrain dominant trends in sustainable supply chain theory development.

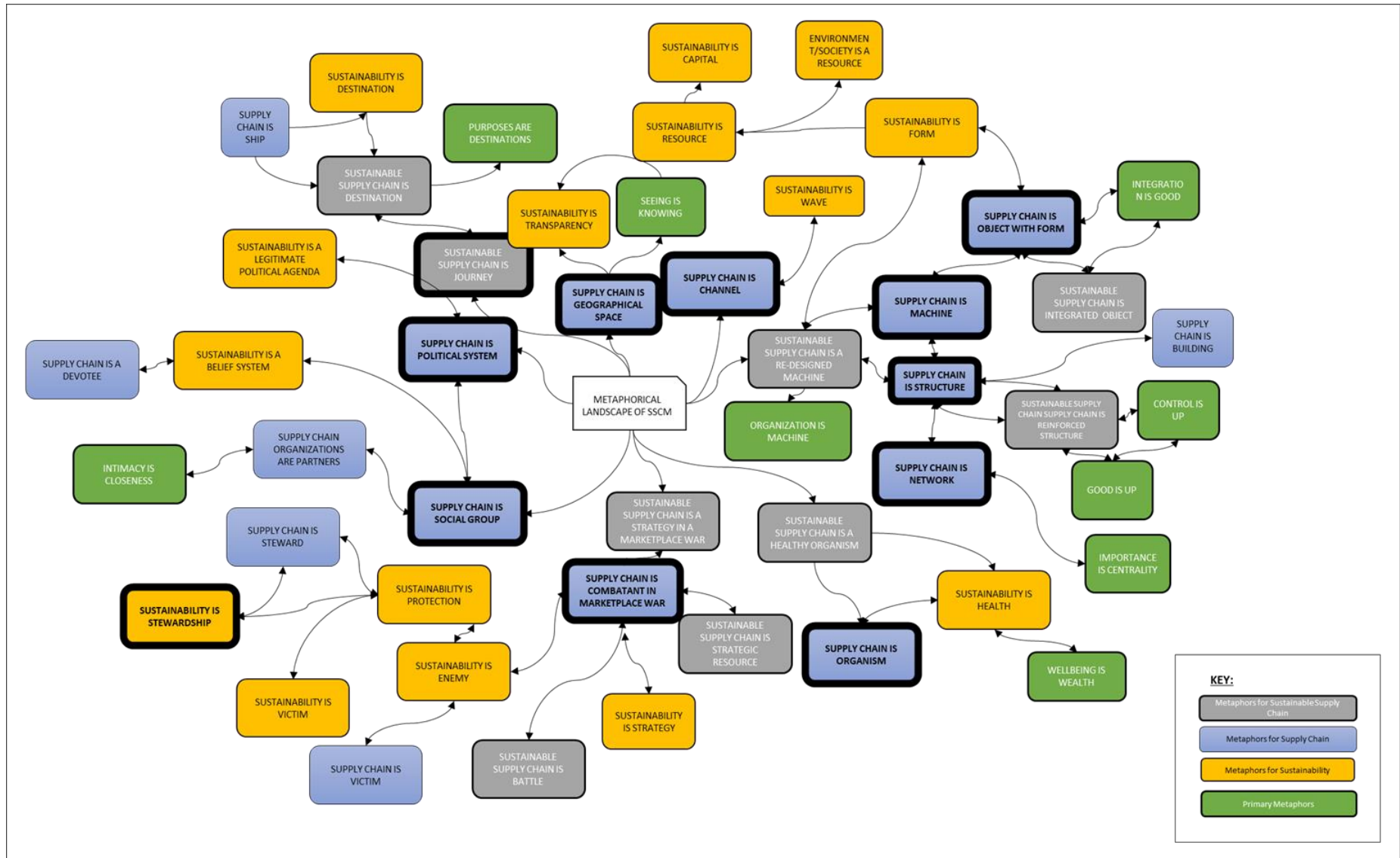
5.4.1. How metaphoric conceptualizations inform sustainable supply chain theory development.

Figure 7 constructs the metaphoric landscape of sustainable supply chain theory based on the results of the systematic metaphor analysis. It illustrates the complex interactions and interplay between metaphoric conceptualizations of supply chain, sustainability and

sustainable supply chains which creates the metaphorical landscape of sustainable supply chain theory. It demonstrates connections between metaphors of supply chain (represented in a blue colour), metaphors of sustainability (represented in an orange colour) and metaphors of sustainable supply chains (represented in a grey colour). Figure 7 also captures relevant additional primary metaphors that provide the basic building blocks which together construct the complex metaphors of sustainable supply chains (represented in a green colour). The analysis demonstrates how dominant metaphors of supply chain and sustainability interact to inform interpretations and metaphoric representations of sustainable supply chains.

The remainder of this section describes the metaphors that were revealed through the systematic analysis, and their interactions, to illustrate how these metaphors make it more or less possible to construct, highlight and explore different features of sustainable supply chains.

Figure 7 A metaphoric landscape of sustainable supply chain theory.



5.4.1.1. Describing the metaphoric landscape of sustainable supply chain theory.

This section elaborates on the metaphors depicted in Figure 7 to construct the metaphoric landscape of sustainable supply chain theory. It demonstrates the linguistic metaphors that provide evidence for underlying roots metaphors of supply chain, sustainability, and sustainable supply chain. The section is organized around the metaphors depicted in bold in Figure 7, with the links to other related metaphors also described.⁴

SUPPLY CHAIN IS AN OBJECT WITH FORM.

The analysis revealed that supply chain scholars draw on several source domains to metaphorically conceptualize supply chains in a way which gives physical embodiment to the abstract concept of supply chain. This ‘thingification’ is a process which ‘makes it possible to treat a phenomenon as something objective outside of human beings and to manipulate and control it’ (Andriessen, 2007, p. 4).

The most basic of these is the metaphorical conceptualization of the SUPPLY CHAIN IS AN OBJECT WITH FORM. As an object with form, the supply chain can be *created*, *formed*, *transformed*, and *shaped*, and subsequently *analysed* in terms of its physical attributes, including its *flexibility*, *robustness*, and *transparency*. With form, the supply chain acquires dimensions including *width* and *length*. This enables supply chains to be described as *shorter*, or to suggest the option of *shortening* the supply chain, for example, to reduce uncertainty (Busse, Meinlschmidt and Foerstl, 2017). It also enables scholars to refer to the *wider* supply chain that *spans* from raw material extractors to final customer. With *form*, different supply chains can also be distinguished from each other in terms of certain *features* or conceptualized in terms of its *sides*, *ends*, as well as the *parts*, *portions*, and *segments* of

⁴ A note on style: In line with metaphor convention (Kovecses, 2002), linguistic metaphors which were identified in the articles are presented in *lower-case italics* (e.g., supply chains are *shaped*). Root metaphors which underly the linguistic metaphors are presented in **UPPER CASE** (e.g., SUPPLY CHAIN IS A MACHINE). Articles from which specific linguistic metaphors quote extracts originate are identified by underlining (e.g., Tipu and Fantazy, 2018).

which the supply chain *is composed*. This enables academics to distinguish between talking about or analysing specific *segments* or *supply-side* / *demand-side* of the supply chain, as opposed to the *whole* or *entire* supply chain.

This metaphor enables the classic judgement of modern supply chains as having been *fragmented* and *disaggregated* as they have *expanded* and become globally *spread*. Thus, the management of supply chains becomes the management of the physical *connections* between supply chain organizations, towards the *integration* and *consolidation* of global supply chains. Seminal definitions used by articles in the sample include those by Oliver and Webber (1992), and Tan (2001) who emphasised that supply chain partners *integrate* and act as a *single unified entity* to compete with competitors' supply chains (e.g., Tipu and Fantazy, 2018).

Through the metaphor of SUPPLY CHAIN IS AN OBJECT WITH FORM, sustainable supply chain management can become a *transformation* of traditional supply chains, or the *transition* from traditional supply chains to sustainable supply chains. When sustainability is also metaphorically conceptualized as a physical entity (SUSTAINABILITY IS FORM), sustainable supply chains can be achieved either by the *integration* of sustainability within business operations along the supply chain, and/or by *applying* sustainability to the supply chain.

The SUPPLY CHAIN IS AN OBJECT WITH FORM metaphor also enables the suggestion that some organizations are known to 'audit only *portions* of the chain, omitting the *portions* of supply chains where labour and environmental abuse are most likely to take place [emphasis added]' (Koh et al., 2017, p. 1527).

SUPPLY CHAIN IS GEOGRAPHICAL SPACE.

The analysis also identified linguistic metaphors that suggest an underlying root metaphor of SUPPLY CHAIN IS GEOGRAPHICAL SPACE. Through this metaphor, supply chains are imagined

in terms of the distribution of objects or places in space. This enables talking about supply chain *settings, space, context, and location*. As a geographical space, the supply chain thus acquires a *boundary*, which means other things can *surround* the supply chain, or can be identified as existing *beyond* the supply chain *context*.

As a geographical space, systematic efforts to *map* and *trace* the supply chain become important, particularly in the sustainability context. For Busse, Meinlschmidt and Foerstl (2017) relevant sustainability-related information can ‘*come from anywhere*’ in the supply chain. This metaphor also enables academics to contextualize sustainable supply chain efforts in terms of the fact that ‘sustainability should not be *limited* to the company under focus’, rather it means ‘*looking beyond* first tier suppliers [emphasis added]’ (Sirilertsuwan, Ekwall and Hjelmgren, 2018, p. 1348) and to characterise sustainable supply chain management in terms of *extending* sustainability to the whole supply chain. One means of evaluating sustainable supply chains thus becomes the *extent* of (un)sustainability across the supply chain space.

SUPPLY CHAIN IS STRUCTURE.

The supply chain is also conceptualised as a structure (SUPPLY CHAIN IS STRUCTURE). Through this metaphor the supply chain gains *structure*, consisting specifically of a supply *base*, upon which are built *echelons*, and *tiers* and *levels*. This metaphor gives the supply chain the attributes of *tiers* and imagines the supply chain’s *vertical* orientation, so that organizations’ contributions to supply chain-related activities are organized in terms of which *tier* they are on, with *Tier 1* suppliers those that relate to the focal firm and *lower-tier* suppliers, or *sub-suppliers*, those that are metaphorically furthest away from the focal firm by virtue of being at *lower* levels of a multi-tiered *structure*. In this context it becomes possible to make sense of sustainability imperative as threatening to *de-stabilise* the supply chain, with the goal of supply chain managers to be actions that assure supply chain *stability*.

SUPPLY CHAIN IS CHANNEL.

While the supply chain metaphors outlined above have emphasised supply chains from a physical structural perspective and give scholars access to terms by which to articulate and identify the supply chain's structural elements, the SUPPLY CHAIN IS CHANNEL metaphor enables scholars to emphasise the effectiveness with which content is transferred in a *linear* fashion, whether *downstream* (goods/services) or *upstream* (capital) or both (information). The channel metaphor highlights consideration of the quality and speed of the *streams* of capital that *flow* through the channel. It is through this emphasis that metaphoric adjectives for supply chains such as *streamlined* and *smooth* can become management aspirations for the optimal performance of supply chain processes. In providing a directional focus for products services (downstream) the metaphor also enables scholars to think in terms of *forward* and *reverse* movement of products.

In the sustainability context, the view of the supply chain as a channel (of flowing substances) thus enables sustainable supply chains to be reasoned about in terms of risk that 'environmental problems may occur at suppliers' sites and *pass through* the supply chain [emphasis added]' (Sirilertsuwan, Ekwall and Hjelmgren, 2018, p. 1348). Moreover, it is through this metaphor that we might understand sustainable supply chain management in terms of an organizational willingness to *infuse* sustainability practices in their supply chain (Ansari and Kant, 2017).

SUPPLY CHAIN IS NETWORK.

The SUPPLY CHAIN IS NETWORK metaphor is realised through linguistic metaphors including *lines*, *nodes*, their *position* (*central* or *peripheral*), and relative *density* of the network. Unlike the SUPPLY CHAIN IS OBJECT WITH FORM and SUPPLY CHAIN IS STRUCTURE metaphors, the SUPPLY CHAIN IS NETWORK metaphor gives access to different types of connections between supply chain organizations as *links/linkages*, *paths*, and thus to *direct* (*immediate*)/*indirect*

connections in the network. Traditionally in supply chain discourse, the network metaphor has been seen as a more appropriate conceptualisation for supply chain, that counters the sequential structure that is suggested by the chain metaphor (Vurro, Russo and Perrini, 2009; Busse, Meinlschmidt and Foerstl, 2017). Through this metaphor, *density* and *centrality* become possible attributes of supply chains. The metaphor also allows academics to consider risks which might threaten the integrity and continuity of the supply chain structure in terms the *weakness* of its links: ‘a supply chain can never be more sustainable than its *weakest link*’ (Paulraj, Chen and Blome, 2017, p. 243).

SUPPLY CHAIN IS MACHINE.

Through the SUPPLY CHAIN IS MACHINE metaphor, supply chains gain *components* as their constituent parts, which are required for the effective *operationalization* of supply chains. The SUPPLY CHAIN IS MACHINE metaphor likens supply chains to mechanical systems which comprises a mechanical structure of inter-connected parts and resources. As a machine, the supply chain has particular *functionalities*, and *operates* to produce a specific *output*. To do so, however, requires the availability of specific *resources* as *inputs*, to ensure the machine is *efficient, effective, productive, reliable, well-functioning*, and not *disrupted*. While the supply chain can *create* value, it simultaneously *generates* waste, such as carbon emissions. As a machine supply chains can therefore be *designed* and *configured or engineered* with specific *components* to be *operated*, be *controlled*, be *performance* managed and *optimised*, in line with its intended (performance) *outcomes* and *outputs*.

Through the metaphor SUPPLY CHAIN IS A MACHINE, sustainable supply chain management becomes about making sure the (supply chain) machine has sustainability *capacity* (Koh et al., 2017). It is also about identifying the *mechanisms* by which sustainability is included, or constraints are removed, to ultimately enhance sustainability *throughput* (Koh et al., 2017).

The SUPPLY CHAIN IS MACHINE metaphor therefore also constructs environment and society as *resources* and *capital*, whose *efficient use* and *consumption* is to be assured, for risk of *exploitation* to the point of *depletion*. *Investment* in *human capital* is therefore seen as a defining characteristic of sustainable supply chains (Chen and Kitsis, 2017).

Similarly, sustainability itself becomes conceptualised as resource or substance that holds instrumental value for the supply chain (SUSTAINABILITY IS A RESOURCE). As a resource, sustainability is further conceptualised as an *asset* (Stranieri et al., 2019). As an asset, sustainability, just like other organizational assets is subject to traditional organizational measurement, and record – i.e., the *type*, *degrees*, and *levels* of sustainability. As a physical resource, sustainability can thus be *measured*, *managed*, and *audited*, as well as *put to work*, *used*, *applied*, *employed*, *enhanced*, and *improved*. This metaphor thus enables sustainable supply chain academics to talk of organizations or supply chains as having *insufficient* sustainability, or *lacking* sustainability, or as having comparatively *greater* sustainability than comparable or partner organizations. Management practices thus strive to *increase* sustainability (Fritz and Silva, 2018) and gain *more* sustainability (Fritz and Silva, 2018). From such a perspective it becomes possible to reason that supply chains and organizations are required to demonstrate the financial merits of sustainable investments (Lu et al., 2018).

Through the SUPPLY CHAIN IS MACHINE metaphor it becomes possible to conceptualize the sustainable supply chain as an adapted version of that machine (SUSTAINABLE SUPPLY CHAIN IS A RE-DESIGNED MACHINE). This metaphor suggests that sustainability requires the existing supply chain machine to be *re-configured* (Koh et al., 2017) *re-designed* (Khalid and Seuring, 2019) and *re-engineered* (Koh et al., 2017; Roy, Schoenherr and Charan, 2018) or *modified* (Busse, Meinlschmidt and Foerstl, 2017) or *upgraded* (Gold, Kunz and Reiner, 2017).

SUPPLY CHAIN IS ORGANISM.

While the metaphors of SUPPLY CHAIN IS OBJECT, STRUCTURE, NETWORK, and MACHINE enable scholars to view supply chains in terms of their constituent parts, the organism metaphor highlights supply chains as a system of inter-dependent, as well as inter-connected elements. The SUPPLY CHAIN AS ORGANISM metaphor extends other previous metaphoric conceptualisations beyond distinguishing between what is (metaphorically) inside the supply chain and what is outside the supply chain (based on a view of the supply chain as a bounded object, or closed system), to enable recognition of the interaction across this boundary. As an organism, the supply chain is recognised as an open system which is not independent of its surroundings, but rather is embedded within a particular *environment*. According to Svensson et al. (2018, p. 17) ‘a supply chain cannot *exist* without the consideration of stakeholders’. The metaphor thus enables a more dynamic view of the supply chain as *responsive* to external influence. Paulraj, Chen and Blome (2017, p. 241) highlighted that ‘an increasing number of studies have found environmental *responsiveness* to be positively related to firm performance.’

Recognition of supply chain as a complex system such as an organism facilitates the ability to talk about the need for capabilities relating to *resilience*, and *alignment* (Gold, Kunz and Reiner, 2017) between the supply chain and its environment as a pre-requisite for *survival*. As an organism, the supply chain acquires attributes including *behaviour*, *capabilities*, *competence*, *logic*, *perspective*, and *reputation*. Khalid and Seuring (2019, p. 666) identified logistics (specifically, the interconnections between warehouses, inventory, and transportation) as ‘the *backbone* of the modern supply chain [emphasis added]’. Moreover, as an organism, the supply chain can thus be *developed*, and subsequently characterised through adjectives related to development (*developed*, *underdeveloped*, *undeveloped*), *agility*, *capability*, *competence*, and *growth*.

In the sustainability context, the sustainable supply chain can be evaluated in terms of its *competence* (Chen *et al.*, 2018), which it may be suggested can be improved through projects which ‘help [...] multi-tier supply chains *learn* sustainability-related [information]’ [emphasis added]’ (Gong *et al.*, 2018, p. 1061), to enhance shared supply chain *knowledge* about sustainability (Koh *et al.*, 2017). Sustainable supply chain management thus becomes about assuring ‘sustainability *capability*’ and supply chains’ environmental *behaviour*. In this context, sustainability can also be metaphorically conceptualised as an *aspiration*, and an *ambition*.

In relation to the SUPPLY CHAIN AS ORGANISM metaphor, the analysis revealed an underlying metaphor of SUSTAINABILITY IS HEALTH. Through this metaphor sustainability is about assuring socio-ecological *health*, *healthiness*, *wellbeing*, alongside economic *vitality*, and *viability*. Sirilertsuwan, Ekwall and Hjelmgren (2018, p. 1348) suggests that ‘the environmental dimension [of sustainability] involves ecosystems’ *life expectancies*... [emphasis added]’.

Through the interaction of the metaphoric conceptualizations of SUSTAINABILITY IS HEALTH and SUPPLY CHAIN IS ORGANISM, sustainable supply chain becomes about the health of the supply chain. Chen and Kitsis (2017, p. 1458) suggest that ‘sustainability-based risk management is central to *healthy* supply chain operation [emphasis added]’. Sirilertsuwan, Ekwall and Hjelmgren (2018, p. 1348) stated that ‘the economic or business dimension [of the TBL concept] involves competition and corporation *survival* [emphasis added]’ while Ruiz-Benitez, Lopez and Real (2019, p. 123) describes economic sustainability as ‘focusing on ensuring a *healthy* cash flow... [emphasis added]’. Thus, according to Ansari and Kant (2017, p. 873), ‘owing to the global competitive atmosphere, market uncertainty and intricacy in product development, *sustenance* of the supply chain has become a major concern for the

business organization [emphasis added].’ Katiyar et al. (2018, p. 305) expressed surprise that ‘no study seems to measure the *health* of a supply chain in terms of SCPI [supply chain performance index] incorporating sustainability ethos [emphasis added].’

SUPPLY CHAIN IS A SOCIAL GROUP.

While the metaphors of SUPPLY CHAIN IS OBJECT WITH FORM, STRUCTURE, NETWORK, MACHINE and ORGANISM emphasise supply chains from a relatively in-animate perspective, the construction of the organizations that interact within supply chains as *members* and *participants*, more formally highlights the social context of supply chains. Through a range of metaphoric linguistic metaphors rooted in the social domain, there is evidence of a conceptual metaphor of SUPPLY CHAIN IS SOCIAL GROUP which organizational members *join*, *participate* in, and contribute to. At a more intimate level, the metaphor of SUPPLY CHAIN IS SOCIAL GROUP also enables the construction of the interactions between individual organizations in the supply chains as *relationships*. Through these metaphors, the supply chain acquires a status as a platform of socialisation, enabling adjectival descriptors such as *cooperative* and *collaborative* supply chains, holding *social capital* as a (metaphorical) resource which can improve the effectiveness of the supply chain. In this context, supply chain organizations are not merely *nodes*, *entities*, or *tiers*, but *members* and (more affectively), *partners*.

The SUPPLY CHAIN IS SOCIAL GROUP metaphor enables the construction of sustainability and the achievement of sustainable supply chains in more affective and subjective terms. Constructs such as *trust* become particularly relevant for theorizing the achievement of sustainable supply chains. This metaphor also makes it possible to recognise issues of (the need for) for example, mutual *understanding* between buyers and suppliers with regards to sustainability requirements or *cooperation* as facilitators of sustainable supply chain management implementation (Lu et al., 2018).

Through the metaphor of SUPPLY CHAIN IS SOCIAL GROUP, consideration of environmental and social sustainability issues thus become a key requirement as well as purpose of *participation*, and *collaboration*. Gong et al. (2018) highlights the need and potential for external knowledge suppliers to *join* focal companies' supply chain and become a supply chain *member*, and for focal companies in particular to *introduce* sub-tier suppliers to Tier 1 suppliers (Gong et al., 2018). Additionally, focal firms may also take on a responsibility to *assist* suppliers and understand and create the conditions in which suppliers are more likely to *participate* in the sustainability initiatives of the supply chain. Roy et al. (2018) also suggests that suppliers' sense of *identification* with the supply chain can generate cooperation and a sense of intention which enables action towards addressing the supply chain's collective sustainability *concerns*. They suggest that such identification is based on 'goodness of the *cause* and the *pride* of association among the suppliers [emphasis added]' (Roy et al., 2018, p. 467).

An associated metaphor is therefore an underlying metaphoric construction of SUSTAINABILITY AS A BELIEF SYSTEM. This metaphor provides access to imagery of sustainability as a *moral obligation* (Ha-Brookshire, 2017) with associated *ethic, ethos, ideals, duties, beliefs, values, principles, vision, and philosophy*. As a belief system, sustainability is something which supply chains/organizations can be *dedicated to, committed to, and practice*. Through this metaphor, socio-ecological incidents in the supply chain can be metaphorically constructed not as accidents (non-metaphorical), or threats (which hails from the metaphor of SUSTAINABILITY AS WAR discussed below), but as *scandals* (Busse, Meinschmidt and Foerstl, 2017; Koh et al., 2017).

SUPPLY CHAIN IS A POLITICAL SYSTEM.

The source domain of politics extends a sense of supply chains as a socially constructed and socially organized concept, as in the SUPPLY CHAIN IS SOCIAL GROUP metaphor, adding an additional level of formality and *control* as it much more explicitly emphasises a concern for who has power over decision-making processes regarding supply chain strategy, structure, or operations. Through this metaphor the organization of the supply chain is understood and managed through concerns of *policies*, *governance*, and *power*. This metaphor gives academics access to verbs that articulate the nature of control over the supply chain – to *govern* (and relatedly to monitor), to *rule*, and to *lead* the supply chain. The supply chain may then also be variously described using adjectives which describe the supply chain such as *centralised* or *decentralised*.

In the sustainability context, the SUPPLY CHAIN IS A POLITICAL SYSTEM metaphor means that sustainability becomes a particular political issue: organizations' particular *positions* on the issues are encoded in sustainability *policies* once sustainability has become recognised as a *legitimate* supply chain *agenda*. Sustainability initiatives may even serve to enhance the *legitimacy* of the supply chain (Chen and Kitsis, 2017). For example, Ni and Sun (2018, p. 156) mention that 'the supply chain gains *legitimacy* and reputation among broader stakeholders because of improved worker motivations on the supplier side'.

Through this metaphor, sustainable supply chain management becomes a political act concerned with simultaneously addressing and 'serv[ing] social, environmental and supply chain *interests* [emphasis added]' (Kumar, Subramanian and Maria Arputham, 2018, p. 104). '[S]everal studies focus on the *interplay* between the company's financial and social performance [emphasis added]' (Svensson *et al.*, 2018, p. 18) or rather, sustainability *tensions* (Xiao *et al.*, 2019). Xiao *et al.*, (2019, p. 3) summarises how '*tensions* can surface between short-term profitability and long-term environmental integrity...between cost

efficiency and sustainability...and between *competing* stakeholders' *interests* [emphasis added]'. Thus, studies have sought to highlight strategies 'that can help organizations to overcome challenges of *conflicting interests* (Khalid and Seuring, 2019). When such interests have been irreconcilable, supply chains and suppliers become sites of political *resistance* to sustainability-related *rules* and *policies* (Sayed, Hendry and Bell, 2017; Mani and Gunasekaran, 2018; Stranieri et al., 2019). Meanwhile, the lack of communication, information-sharing, collaboration, and trust are deemed persistent *resistors* to sustainable supply chain management (Chen and Kitsis, 2017). Xiao et al. (2019, p. 4) found in their study of sustainability tensions in a buying firm that the 'dominant response by both purchasing and sustainability managers is still the intentional, or unintentional, *suppression* of sustainability ideals to achieve cost targets [emphasis added]'.

SUSTAINABLE SUPPLY CHAIN IS A JOURNEY.

In addition to the dominant metaphors of supply chain and associated metaphors of sustainability, the results of the systematic metaphor analysis provided evidence of the metaphoric conceptualization of SUSTAINABLE SUPPLY CHAIN IS A JOURNEY towards sustainability destination (SUSTAINABILITY IS A DESTINATION). Together these metaphors allow academics to frame sustainable supply chain management in terms of the practices, activities or measures that represent a particular *approach*, *path*, or *road* that will *lead towards* sustainability. It allows understanding sustainability-related management activities in the supply chain as a *pursuit* of (Chen and Kitsis, 2017) or *quest* (Sauer and Seuring, 2018) for sustainability, with intermediate successes conceptualised as *progress*. Through this metaphor, sustainable supply chain also becomes concerned about *barriers* that impede organizational/supply chain *progress* towards the sustainability destination. The metaphor also helps to frame organizations within the supply chain, or supply chains within industries, either as *leaders* or *followers* in terms of their relative *progress* towards sustainability.

The journey metaphor enables thinking about sustainability as *beginning*, or indeed *re-starting* (their journey following changes in regulations) (Yun et al., 2019) as having *stages*, being *advanced, accelerated, or hindered* (Nakamba, Chan and Sharmina, 2017). This metaphor also enables reasoning about organizational *movement* from supply chain management to sustainable supply chain management (Ardakani and Soltanmohammadi, 2019), with traditional and sustainable supply chain management thus constructed as respective stages on the sustainable supply chain journey. According to Mani and Gunasekaran (2018, p. 152), sustainability driven practices in purchasing processes ‘*pave the way for sustainability adoption in the upstream supply chain [emphasis added]*’. This metaphor supports the view that the vital responsibility for academics is to satisfy managers’ ‘*dire need of a coherent roadmap for sustainability practices [emphasis added]*’ (Chen and Kitsis, 2017, p. 1455). The metaphor also allows the suggestion that supply chain sustainability is only possible from different *trajectories* that are related to the context (Fritz and Silva, 2018). Through this metaphor, sustainable supply chain scholarship can thus be conceptualised as being concerned with finding the factors that ‘*accelerate sustainability development [emphasis added]*’ (Chen and Kitsis, 2017, p. 1462) to reach the sustainability destination sooner and more effectively.

This metaphor thus allows Busse, Meinlschmidt and Foerstl (2017, p. 106) to metaphorically conceptualise organizations’ sustainability-information processing capabilities as a rudder of a ship – a means by which organizations can ‘*steer the suppliers in the supply chain to the levels of sustainability performance that the buying firm requires [emphasis added]*’. Used in this way, suppliers and the supply chain become seen as a vehicle/ship to be navigated by the focal firm, to assure supply chain performance improvement ‘*in the direction of sustainability*’ (Nouri, Nikabadi and Olfat, 2019). For Nouri, Nikabadi and Olfat (2019, p. 150) the metaphor motivates their research aim to develop a sustainable supply chain framework by

which companies ‘can clearly understand their positions in the sustainability *path* to take the necessary *steps* to secure sustainability [emphasis added]’. Drawing on a broader level discourse at the (systemic) level of the political economy sustainable supply chain is a *steppingstone* to building circular economy (Katiyar et al., 2018).

SUPPLY CHAIN IS A COMBATANT IN A MARKETPLACE WAR.

Through linguistic metaphors drawn from the source domain of war, supply chains are conceptualised as a combatant in a marketplace war. This metaphor is predominantly realised through the discussion of *strategy* and *objectives* which enable supply chains to *compete* with other supply chains (supply chains *versus* supply chains). In the sustainability context, supply chain sustainability becomes a *strategy* for an organization, with associated sustainability *objectives* and *targets*. Sustainability therefore serves to ‘*shield* brand value from reputation risks, as well as differentiating brands from the *competition* [emphasis added]’ (Sirilertsuwan, Ekwall and Hjelmgren, 2018, p. 1348).

A sustainable supply chain thus similarly becomes a strategy of competitive advantage, with green supply chains or other sustainable supply chain measures *deployed* (Busse, Meinlschmidt and Foerstl, 2017), as though they are troops in the ongoing competitive battle. Koh et al. (2017, p. 1528) described ‘sustainable supply chain competition as the new *frontier* [emphasis added]’ with the suggestion that the management of sustainable supply chains is to survive in the new *competitive* marketing environment. Similarly, Chen and Kitsis (2017, p. 1462) suggested that ‘corporations may opt to accelerate their sustainable practices when facing growing pressures from multiple *fronts* [emphasis added]’. Evidence of this is enabled through discussion and ambitions around organizational and supply chains’ positions in sustainability *rankings*.

The source domain of war is thus also drawn upon in such a way as to construct SUSTAINABILITY IS AN ENEMY, which threatens supply chain's competitive capability and ultimately, organizational and supply chain survival, particularly for smaller supply chain organizations. Traditional sustainability-related issues, such as providing social insurance for all workers, could, according to Xiao et al. (2019) kill profits, and threaten their survival. This is evidenced through discussion of sustainability related topics (e.g., social issues) plaguing the supply chain (Mani, Gunasekaran and Delgado, 2018), and thus enables discussion of sustainability risks as meaning risks to the supply chain from sustainability-related issues, as much as risks to society/environment from supply chain-related activities. The emergent threat of sustainability means that supply chain organizations have also been conceptualized as a *victim* (SUPPLY CHAIN IS A VICTIM) which is *exposed* and *vulnerable*, as 'negative actions of suppliers, such as any use of child labour, labour analogous to slavery, and environmental degradation, can violate the image and brand of the company in focus' (Fernandes and Bornia, 2019, p. 107). Similarly, firms suffer from reports of irresponsible upstream partners (Chen and Kitsis, 2017). As supply chains have been 'confronted with a lot of environmental challenges' they too 'need to confront operational risk because of social issues' (Mani, Gunasekaran and Delgado, 2018, p. 259).

In this context, the achievement of sustainable supply chain is a battle (SUSTAINABLE SUPPLY CHAIN IS A BATTLE). Xiao et al. (2019, p. 57) conceptualised the 'supply chains in China as the main battleground for supplier sustainability management for most multinational companies in the consumer electronics industry'. Uncertainty or riskiness associated with the information, policies or practices from specific supply chain locations are identified as consumption, emission, and waste hotspots (Koh et al., 2017). So-called 'true' sustainability may thus be constructed as a 'reconciliation' of supply chain (economic) and sustainability (social and environmental) interests (Yun et al., 2019). In the sustainable supply chain battle,

supply chains *struggle* to show the financial merit of sustainable investments (Lu et al., 2018) and *struggle* to prioritise sustainability performance over economic performance (Tipu and Fantazy, 2018).

Through this metaphor, dependent on whose interests are prioritised, both supply chains and sustainability may be seen as the victim in the battle. For some, sustainable supply chain is a battle to *secure* (Gong et al., 2018) and *safeguard* (Sauer and Seuring, 2018) the supply chain (SUPPLY CHAIN IS A VICTIM). The negative actions of suppliers, such as any use of child labour, modern slavery, and environmental degradation can *violate* the image and brand of a company (Fernandes and Bornia, 2019). On the other hand, sustainability becomes a victim (SUSTAINABILITY IS A VICTIM), which can be *hampered* (Koh et al., 2017) *constrained* (Koh et al., 2017), and *threatened* (Sauer and Seuring, 2018) due to wider supply chain and economic policies and practices.

A related metaphoric conceptualization of sustainability is SUSTAINABILITY IS PROTECTION as sustainable supply chain scholars construct sustainability in terms of firms' and supply chains' responsibilities to protect socio-ecological systems from *violation, harm, abuse, and threats*. This further constructs sustainability, or society or the environment, as a casualty or victim of the marketplace war (SUSTAINABILITY IS A VICTIM). Socio-ecological systems are also seen to be *vulnerable* to organizational or supply chain processes. Through this metaphor, sustainability involves more dramatic remedial efforts to *save* the (firm's) ecosystem (Shee et al., 2018), and to actively *protect* socio-ecological systems from *harm*. Thus, sustainable supply chain may in this context be characterised partially in terms of the assurance of products which are deemed *safe, or safer*, for socio-ecological systems. For example, Yun et al. (2019) use environmental *violation* and social *violation* as particular measures for sustainable supply chain performance.

SUSTAINABILITY IS STEWARDSHIP

The final metaphoric conceptualization of sustainability is SUSTAINABILITY IS STEWARDSHIP. The metaphor of stewardship is revealed through linguistic metaphors of supply chain *responsibility* and concern for the *welfare* of the natural environment and wider society and economy. It offers imagery to consider organizations' and supply chains' responsibility to assure good environmental *conduct* in recognition of environmental and social *needs*, and thus proposes sustainable supply chain as representing activities that relate to environmental *carefulness, maintenance, conservation, and preservation*, for environmental *integrity* and the prevention of environmental *deterioration, degradation, damage, and accidents*, ultimately to assure environmental or social *benefits*.

In this context, the supply chain becomes conceptualized as a *steward* (SUPPLY CHAIN AS STEWARD). The metaphor gives rise to descriptive terms for supply chains (e.g., *responsible* supply chains) and enables academics to describe and categorise what the supply chain is *responsible for*. For example, for assuring *clean* production, and limiting *pollution*.

5.4.1.2. How metaphors inform sustainable supply chain theorizing.

The presentation of the metaphors in the previous section illustrates a complex interplay of metaphors that work together to inform and structure thinking about sustainable supply chains. Through a systematic analysis of the metaphors used to think and talk about core concepts of supply chain, sustainability, and sustainable supply chains, it becomes evident that metaphors play a role in giving these concepts structure and meaning (Andriessen and Gubbins, 2009). They make it possible to construct, highlight and explore different elements of sustainable supply chains. In combination, they give access to a rich array of perspectives on sustainable supply chains and associated phenomena. They build upon one another to provide additional or more specific characteristics of a concept which imbue it with

(different) meanings and therefore highlight different types of concerns for sustainable supply chain scholars.

For example, through the metaphors of SUPPLY CHAIN AS AN OBJECT WITH FORM and SUPPLY CHAIN AS STRUCTURE, the supply chain is constructed as a composite ‘thing’ which leads to concerns for its integrity and stability through the effective design, structure, and integration of its constituent parts. As a machine (SUPPLY CHAIN AS A MACHINE), that ‘thing’ gains an instrumental purpose, with attendant concerns for assuring its effective and optimal functioning. As network (SUPPLY CHAIN AS A NETWORK), the supply chain is characterised by its interconnectedness, highlighting the material, information, and financial interactions between supply chain organizations . Alternatively, the SUPPLY CHAIN AS A CHANNEL metaphor offers greater access to consideration of the content (quantity, quality, speed) of exactly *what* is being transferred in those interactions. As an organism (SUPPLY CHAIN AS AN ORGANISM), the supply chain’s constituent parts are highlighted as inter-dependent, and the relationship between the supply chain’s activities and its wider environment becomes of greater concern, at the aggregate and local levels. Through the metaphor of SUPPLY CHAIN AS A SOCIAL GROUP sustainable supply chain thinking gains access to concepts of *relationships, partnerships, collaboration, and trust*, and as a political system (SUPPLY CHAIN AS A POLITICAL SYSTEM), sustainable supply chain theorizing gains access to alternative concepts of *governance, power, and interests*.

These images provide nouns, verbs, and adjectives as ways of talking about, thinking and about and theorizing supply chains. For example, the root metaphor of SUPPLY CHAIN AS A STRUCTURE provides the supply chain scholar with nouns that build imagery of supply chains (*base, echelons, tiers*), verbs that indicate activities concerning supply chains (*to plan, build*) and adjectives that depict attributes of supply chains (*stability*), through which academics can

imagine and seek to control supply chains. Andriessen and Gubbins (2009, p. 12) emphasise that ‘the more metaphors are used, the more verbs become available in ... theorizing to discuss interdependencies, causal mechanisms, control and manipulation.’

However, from a problematization perspective, and in line with the assumptions of the Independent Appraisal quadrant of the Approaches to Metaphor framework (Figure 4), they may not only inform theory development, but also constrain theory development.

5.4.2. How metaphors may *constrain* sustainable supply chain theory development.

The Independent Appraisal quadrant of the Approaches to Metaphor framework (Figure 4) assumes that existing metaphors which have become taken for granted in sustainable supply chain theory may constrain theory development for several interconnected reasons: they may stymie the creation of new perspectives on sustainable supply chains, may not be aligned with empirical reality, or may perpetuate certain values which may be deemed inappropriate in the sustainability context. In line with the perspectives discussed in section 5.2, consideration of how existing metaphoric conceptualizations of sustainable supply chains may constrain sustainable supply chain theory development can therefore be addressed from two perspectives.

The first is concerned with what theoretically salient issues of sustainability are hidden by current metaphors in sustainable supply chain theory. It requires considering to what extent metaphorical conceptualizations in sustainable supply chain theory sufficiently capture or hide the salient issues of sustainability as it is presented in wider discourses. The second is concerned with the entrenched values that may be perpetuated by the complex interplay of *primary metaphors* which provide the atomic components of the field’s root metaphors. It requires recognizing the extent to which metaphoric conceptualizations within sustainable supply chain theory are complex metaphors which are infused with *primary metaphors* which

represent deep-seated understandings of subjective experiences. As primary metaphors mean understanding subjective experiences through experiences of the physical world, they may inform deep-seated assumptions and logics about the practice of sustainable supply chain research and the concerns of sustainable supply chain theorizing on the basis of ‘metaphorical common sense’ (Lakoff, 2002, p. 5). These two perspectives are addressed in turn in the following sections.

5.4.2.1. Constraining theory development by hiding theoretically salient issues.

To problematize the metaphors in sustainable supply chain theory through reflecting on what salient issues are hidden by dominant metaphors requires an external standard of critique (Alvesson and Sandberg, 2011). In the context of metaphor analysis, an external standard of critique can take the form of a ‘cultural foil,’ which is an overview of the accepted metaphorical concepts which are used to reflect upon a topic within neighbouring disciplines or the everyday world (Schmitt, 2005, p. 370).

For the purposes of reflecting on the metaphors identified through the systematic metaphor analysis, a cultural foil may be provided by evidence of sustainability metaphors in wider discourses. Numerous studies have identified and discussed metaphors of and for sustainability in a variety of contexts, and in line with the sustainability metaphors identified in this analysis, metaphors of SUSTAINABILITY AS HEALTH, SUSTAINABILITY AS PROTECTION, SUSTAINABILITY AS VICTIM, SUSTAINABILITY AS STEWARDSHIP, SUSTAINABILITY AS JOURNEY/DESTINATION, and SUSTAINABILITY AS RESOURCE, have all been identified as reflecting culturally accepted conceptualizations of sustainability (Carew and Mitchell, 2006; Milne, Kearins and Walton, 2006; Frischherz, 2010; Peattie, Gruska and Frischherz, 2012; Berry, 2015).

However, the relevance of such a ‘cultural foil’ (Schmitt, 2005) warrants more critical reflection in the context of sustainability. This is because, although it is well-established that there are competing perspectives on sustainability, *weak* sustainability may be perceived as the prevailing perspective within the dominant social paradigm. Therefore, the fact that there is alignment between the sustainability metaphors identified through this systematic metaphor analysis and the metaphors identified by other studies of wider discourses should not necessarily be seen to provide confirmation of the accuracy of the results of the systematic metaphor analysis, nor to validate the appropriateness of the conceptualizations of sustainability within sustainable supply chain theory. It may instead be seen to highlight the extent to which theorizing sustainability is challenged by the fact that organization and supply chain sustainability theorists are embedded within the dominant social paradigm. For example, although Frischherz (2010) interpreted SUSTAINABILITY AS A JOURNEY as an apolitical metaphor, Milne, Kearins and Walton (2006) suggested that this metaphor is dangerous for sustainability because it reflects and perpetuates assumptions of weak sustainability.

Given that sustainable supply chain theory has been characterized by the assumptions of weak sustainability (Matthews *et al.*, 2016; Montabon, Pagell and Wu, 2016), sustainable supply chain metaphors may be more appropriately evaluated in terms of the extent to which they hide or highlight assumptions and features of strong sustainability. In contrast to weak sustainability, strong sustainability may be characterized by its emphasis on the extent and urgency of the change required to achieve sustainability. While weak sustainability assumes that the management of environmental concerns can be integrated within existing systems and structures of business, strong sustainability assumes that a radical overhaul of existing systems is required (Roome, 2012).

Some metaphoric conceptualizations of sustainable supply chains revealed through the systematic metaphor analysis reflect perspectives which seem to favour the preservation or adaptation of the status quo. This has already been inferred through dominant definitions of sustainable supply chain (e.g., Wittstruck and Teuteberg, 2012). Additionally, Seuring and Muller (2008, p. 1705) suggested that ‘Sustainable supply chain management has to take into account a wider range of issues [than conventional supply chain management] and, therefore, look at *a longer part* of the supply chain [emphasis added]’.

However, such assumptions are also vividly revealed through the systematic metaphor analysis by the metaphor of SUSTAINABLE SUPPLY CHAIN IS A RE-DESIGNED MACHINE. This is strongly associated with the SUPPLY CHAIN IS MACHINE metaphor and suggests that sustainability can be accommodated within an adapted version of the pre-existing supply chain machine. It suggests that sustainable supply chains are *re-configured* or *upgraded* versions of the original machine. These re-designed machines can thus still be *operated*, *controlled*, *performance* managed and *optimised*, in line with its intended (performance) *outcomes* and *outputs*.

This can be seen reflected in research concerns to explore or test mechanisms, tools, or techniques for their effect on sustainable supply chain *performance*. For example, Shee et al. (2018) explored how cloud technology enabled supply chain integration and thereby enhanced sustainable supply chain performance. Additionally, Busse, Meinlschmidt, and Foerstl (2017, p. 88) identifies supply chain *modification* measures and ‘offers a cost-benefit argumentation as to when firms decide to adopt such sustainability-driven supply chain *modification* [emphasis added]’ to improve socio-ecological performance measurement.

This perspective offers support for other scholars’ observations that the sustainable supply chain field has been pre-occupied by how sustainable supply chains are similar to, rather than

different from, conventional supply chains (Pagell and Shevchenko, 2014). It suggests that the sustainable supply chain field may not only be inheriting paradigmatic assumptions and theoretical lenses from its parent field, but also metaphoric baggage.

From the perspective of theoretical progress in terms of strong sustainability, there are two key implications of this conceptualization. The first relates to the fact that a simple upgrade or modification of the supply chain machine inherently assumes that the change required in supply chain systems and structures is incremental rather than radical (Pagell and Shevchenko, 2014). Such metaphorical baggage may therefore be constraining sustainable supply chain theory development by distracting sustainable supply chain scholars from theorizing the radical supply chain changes that many have suggested are necessary for the achievement of true sustainability (Pagell and Wu, 2009) and which is already happening in practice (Sharma and Henriques, 2005; Pagell and Wu, 2009; Pagell, Wu and Wasserman, 2010). Radical changes may include reconceptualizing the supply chain in terms of who is in the chain, what the chain does, and how success is measured (Pagell and Wu, 2009). This has informed emergent concepts of ecocentricity, servicizing, and reverse logistics, but, as supply chain scholars have noted, these have not yet been well-integrated within the sustainable supply chain literature (Pagell and Wu, 2009).

The second relates to the fact that the metaphorical mapping associated with the SUSTAINABLE SUPPLY CHAIN IS A REDESIGNED MACHINE metaphor constructs socio-ecological stakeholders in functional and instrumental terms, which act as *resources*, *components*, *inputs*, or *enablers* for the effective functioning of the machine. Wider literature would suggest that, even as a *re-designed* machine, the assumptions of the mechanistic metaphor may simply not be able to fully accommodate theorizing the place of societal and natural stakeholders in supply chains in the way that strong sustainability perspectives would suggest is required (Banerjee, 2012; Barter and Russell, 2013; Montabon, Pagell and Wu, 2016).

Consistent with the view of the extent of transformational change required for achieving a sustainable socio-ecological order, strong sustainability perspectives have been associated with metaphoric constructions which reflect a catastrophic scale of the sustainability crisis. Against this backdrop, the source domain of war has provided fertile ground for constructing sustainability issues. Such a metaphoric framing has been associated with survivalism discourses which are more closely associated with the assumptions of strong sustainability (Dryzek, 2013) which constructs the issue of sustainability in crisis terms, requiring an urgent and aggressive response. The war metaphor has therefore been seen as a potentially useful way of re-framing the urgency of the climate crisis within popular perceptions communicating the urgent need to act on the issue, and to help to unite people in addressing it (Flusberg, Matlock and Thibodeau, 2017).

SUSTAINABILITY AS WAR has been identified as a common, if not over-used metaphor for sustainability (Mangat and Dalby, 2018). Frischerz (2010) identified SUSTAINABILITY AS WAR as one of the top two metaphors for sustainability within organizations' public discourse, and contemporary scientific discourse has similarly begun to emphasise sustainability as a 'climate *crisis*'. For example, accompanying the publication of the UN Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C, Debra Roberts, co-chair of the working group on impacts, said, 'this is the largest clarion bell from the science community and I hope it *mobilises* people and dents the mood of complacency [emphasis added]' (Watts, 2018).

Against this backdrop, a particularly notable observation of the results of the systematic metaphor analysis is the *way in which* the source domain of war is invoked within sustainable supply chain theory. The systematic metaphor analysis revealed that the source domain of war *is* invoked within sustainable supply chain theory. However, it is not invoked in terms of the achievement of sustainability itself, but rather to position supply chains within a strategic

and competitive battle in the marketplace (SUPPLY CHAINS AS COMBATANTS IN A MARKETPLACE WAR).

In the management literature, the source domain of war has been considered the most used metaphor for strategy (Audebrand, 2010). Given the known influence of management strategy literature on supply chain scholarship (Halldórsson, Hsuan and Kotzab, 2015), it is perhaps not surprising to also find sustainability simultaneously constructed as an *enemy* to supply chain, a source of *protection* against multi-faceted (e.g., operational, and reputational) risks, and a *strategy* for competitive advantage. The way in which the war source domain is invoked in sustainable supply chain discourse suggests that the ‘war’ that calls for unity and urgency is, in fact, a marketplace war, requiring strategies for success in the marketplace.

Moreover, quite at odds with the assumptions of crisis associated with SUSTAINABILITY AS WAR, the systematic metaphor analysis instead revealed more benign metaphoric conceptualizations of sustainability in sustainable supply chain theory, such as SUSTAINABILITY AS STEWARDSHIP, SUSTAINABILITY AS PROTECTION, and SUSTAINABILITY AS HEALTH which lead to concerns for ‘*carefulness*’, ‘*socio-ecological welfare*’, and ‘*conservation*’. Again, these constructions may be distracting sustainable supply chain scholars from theoretically salient issues of how (the scale, scope, and urgency) supply chains need to address sustainability from a strong sustainability perspective.

This section has provided a reflection on the potential implications of certain metaphors within sustainable supply chain theory. Using the assumptions of strong sustainability and its associated metaphoric constructions as an external standard of critique, this section has suggested how certain metaphoric conceptualizations may serve to reflect and perpetuate certain facets of the field’s assumption ground – namely assumptions of weak sustainability

(SUSTAINABLE SUPPLY CHAIN AS REDESIGNED MACHINE) and instrumentalism (SUPPLY CHAIN AS COMBATANT IN A MARKETPLACE WAR).

5.4.2.2. Constraining theory development through assumptions rooted in primary metaphors.

Problematizing the metaphors in sustainable supply chain theory in terms of how they may constrain sustainable supply chain theory development also requires consideration of the ‘metaphorical common sense’ (Lakoff, 2002) that may be harboured by *primary* metaphors. As has been mentioned, primary metaphors are metaphors that involve understanding an abstract experience in terms of a much more direct physical experience (Gibbs Jr., 2006). These direct physical experiences include, for example, bodily movements and the felt experience of engaging with and manipulating physical objects (Cornelissen and Kafouros, 2008b). They also act as atomic components that enable the construction of more complex metaphorical conceptualisations (Lakoff and Johnson, 1999; Cornelissen and Kafouros, 2008b).

The systematic metaphor analysis helps to illustrate that primary metaphors are unavoidable in communicating meaning across sustainable supply chain theory through shared embodied understanding. For example, in their effort to develop a research framework for sustainable supply chain management, Chen and Kitsis (2017) refer to the importance of relational practices and relational capabilities in the supply chain and emphasize that ‘*close* collaboration help nurture intimate trust between Timberland and its suppliers [emphasis added]’ (p. 1466), that ‘Brand owners...must work *closely* with their supply chain partners [emphasis added]’ (p. 1455), and that certain relational practices are ‘essential to building *close* partnerships [emphasis added]’ (p. 1456).

To describe partnerships as ‘close’ is to draw upon the pervasive primary metaphor of INTIMACY IS CLOSENESS (Lakoff and Johnson, 1999, p. 50). This primary metaphor is rooted in the widely shared human experience of being physically close to people with whom one is intimate. Its cultural pervasiveness facilitates communication of the idea that supply chain exchanges are characterized by a metaphorical intimacy which is akin to intimacy in personal relationships. Such intimacy is thus assumed to be a corollary of certain other relational dimensions, such as trust, which is seen as an important enabler of sustainability.

Other primary metaphors are also apparent in the metaphoric conceptualizations identified through the systematic metaphor analysis and play a role in informing the assumption ground of the field. One such assumption relates to the logic of *integration* and *control* in sustainable supply chain theory which may be associated with primary experiences of encountering an object with form (SUPPLY CHAIN AS AN OBJECT WITH FORM), or a physical structure (SUPPLY CHAIN AS A STRUCTURE). The logic of *integration* within supply chain scholarship has been identified by supply chain scholars (New, 2004; Fabbe-Costes, Lechaptois and Spring, 2020). New (2004) suggested that supply chain scholarship deals with the concept of integration as something which is implicitly and intrinsically a good thing.

A cognitive perspective on metaphor provides one theoretical explanation for this logic. It suggests that the most basic primary image scheme of ‘object,’ and our sensorimotor experiences of dealing with objects in real life, provide the logic for the primary metaphor INTEGRATION IS GOOD. This serves to imbue the concept of supply chain *integration* with a positive value judgment. This provides a ‘metaphorical common sense’ (Lakoff, 2002) that supply chain management means the management of the physical *connections* between supply chain organizations towards the *integration* and *consolidation* of global supply chains.

Against this backdrop, it makes sense to find the issue of supply chain sustainability contextualized in terms of the level of *fragmentation* in modern global supply chains, which have become *disaggregated* as they have *expanded* and become globally *spread*. Certain managerial trends and global drivers have been shown to have led to supply chains becoming *longer*, more complex, and more *fragmented*. A popular assumption of sustainable supply chain theory is therefore the value and benefit of integration, and associated concepts of consolidation, as compared with antonymous concepts such as fragmentation and dispersion. Thus, sustainable supply chains have been similarly characterized in terms of the supposed ideal attributes of conventional supply chains – such as *seamless integration* with suppliers in order to achieve sustainability objectives (Khalid and Seuring, 2019).

Supply chain consolidation and integration are necessary conditions for important theoretical concepts of supply chain *transparency* and *visibility*, which have become important in sustainable supply chain theory. Concerns for supply chain *transparency* and *visibility* are rooted in the shared understanding of the primary metaphor of SEEING IS KNOWING which is based on the experience of getting information through vision (Lakoff and Johnson, 1999, p.54). Combined with conceptualizations of SUPPLY CHAIN IS AN OBJECT WITH FORM, issues of supply chain *transparency* (or *opacity*) become key sustainable supply chain concerns. Combined with the conceptualizations of SUPPLY CHAIN IS A GEOGRAPHICAL SPACE issues of *mapping* and *tracing* supply chains are similarly logical goals in sustainable supply chain management.

The combination of SUPPLY CHAIN IS A GEOGRAPHICAL SPACE and SEEING IS KNOWING also makes it possible to understand the metaphorical nature of novel theoretical terminology related to the supply chain's *visible horizon* (Carter, Rogers, and Choi, 2015, cited by Khalid and Seuring, 2019). Carter, Rogers, and Choi (2015) suggest the *visible horizon* provides a boundary to the supply chain based on the focal agent's awareness of other nodes. For the

development of supply chain theory, the *visible horizon* is thus deemed to create ‘a parsimonious unit of analysis that is neither overly simplified (i.e. the dyad or triad) nor overly complex (i.e., a vast supplier network that changes its shape constantly’ (Carter, Rogers and Choi, 2015, p. 91). The primary metaphor of SEEING IS KNOWING therefore may be seen to be important here in informing the assumption ground that has bounded these supply chain theorization activities (Bacharach, 1989).

Evidence of the experiential basis of conceptual reasoning (i.e., primary metaphors) which can be seen to be present in conceptualizations of sustainable supply chains, makes it possible to suggest a metaphoric explanation for the pervasiveness of certain assumptions and logics within sustainable supply chain theory. When the supply chain is conceptualized as an object with form, it may seem wholly *illogical* to suggest that the sustainable supply chain is not ‘better’ when it is whole, integrated and fully formed.

Similarly, the metaphor of SUPPLY CHAIN AS A STRUCTURE means that a key concern for sustainable supply chain theorists is supply chain *stability*. Through this metaphor it becomes possible for the supply chain to be perceived with a vertical orientation (e.g., ‘*vertical integration*’). As the risk of suppliers’ infractions or the risk of raw material depletion threatens to *de-stabilise* the supply *base*, so it is similarly logical that sustainable supply chain management concerns *stabilising* the supply chain to ensure continued ‘upness’. For example, Wolf (2014, p. 319) suggests that ‘by promoting sustainable fishing practices throughout its entire supply chain, Wal-Mart sought to *stabilize* the fish supply chain for purposes other than mere stakeholder pressure [emphasis added]’.

The vertical orientation of human experience has been shown to be an important experiential basis for the metaphorical interpretation of a range of abstract concepts (Lakoff and Johnson, 1999). Primary metaphors such as GOOD IS UP, HAPPY IS UP, and MORE IS UP are based on

physical experiences of having an upright bodily posture based on high level of energy when feeling happy (thus, we might say, 'I'm feeling *up* today'), or observing the rise and fall of levels of piles and fluids as more is added or subtracted (thus we might say, 'prices are *high* at the moment') (Lakoff and Johnson, 1999). Our understanding of being in control is similarly related to our sensorimotor experience of the body's vertical orientation, as well as our understanding based on physical experiences that it is easier to control another person or exert force on an object from above, as you have gravity working with you.

Therefore, the vertical orientation of the supply chain may also provide some explanation for logical assumptions that exist around the locus of supply chain power and control which is seen to reside in the supply chain players at the *top* of the supply chain. Through assumptions associated with the primary metaphor of GOOD IS UP, it becomes possible for focal firms and *tier-1* suppliers to acquire importance, with *lower-tier* or *sub-suppliers* diminished in importance.

Alternative metaphors for supply chains seem to offer a more distributed structure and power-set, as in alternative metaphors of 'webs', 'nets' or 'networks'. However, through the primary metaphor, IMPORTANCE IS CENTRALITY (Lakoff and Johnson, 1999), the SUPPLY CHAIN IS NETWORK metaphor may similarly perpetuate assumptions about the construction of the supply chain in terms of the locus of power and control. The metaphorical meaning of the terms *central* and *peripheral* have become mainstream and literalized, as evidenced by the fact that the Macmillan dictionary offers the following as its first definition of 'peripheral': 'connected with something but not a necessary or important part of it' (Macmillan Education, 2007, p. 1109). The Macmillan dictionary similarly offers as its second definition of 'central' – 'one of the main [things] that is used or needed' and 'something that is extremely important' (Macmillan Education, 2007, p. 230). The network metaphor may therefore enable the construction of the importance of a *focal* firm in a supply chain who, following Seuring

and Muller's (2008) definition of sustainable supply chain, is the firm that 'controls' the supply chain. It is at the focal point of the network where network lines converge and concentrate, while other organizations exist at the *periphery* of the network.

In line with the assumptions of these metaphors, the supply chain, and subsequently sustainable supply chain field's research and theoretical emphasis has been on the focal firm. Several scholars have noted that supply chain research is 'stuck' at the level of the focal firm (Beske-Janssen, Johnson and Schaltegger, 2015; Quarshie, Salmi and Leuschner, 2016; Glover and Touboulic, 2020, p. 43). Similarly, Beske-Janssen, Johnson and Schaltegger (2015, p. 671) suggested that 'in most cases the *focal* firm is implicitly implied as the *core* actor, which may be the result of the prevailing definitions of sustainable supply chain management'. Primary metaphors may infuse the assumption ground of sustainable supply chain, and therefore inform key definitions of sustainable supply chains, with the potential effect of distracting scholars from greater focus and emphasis on what have been called 'non-traditional actors' in the supply chain (Pagell and Wu, 2009).

Other scholars have similarly noted that supply chain scholars are focusing on 'members of the supply chain through which products physically flow,' leading to theoretical omissions of 'the many additional members of the supply chain that play a vital but indirect, supportive role in the movement, storage and transformation of product across organizations' (Carter, Rogers and Choi, 2015, p. 89). Calls are therefore being heard for greater emphasis on sub-suppliers and other non-traditional actors (Pagell and Wu, 2009; Carter, Rogers and Choi, 2015; Sauer and Seuring, 2018).

Finally, in the context of sustainability, it is important to acknowledge the influence of primary metaphors on the abstract concept of morality. Morality fundamentally relates to human wellbeing and is concerned with what is right and what is wrong in terms of

promoting experiential wellbeing and preventing experiential harm of others (Lakoff and Johnson, 1999; Lakoff, 2002). Things that are bad or wrong are things that cause experiential harm, while things that are good or right are things that promote wellbeing or prevent harm. Like other abstract concepts, morality is similarly structured metaphorically through experiences of the physical world (Lakoff and Johnson, 1999).

Lakoff (2002, pp. 42–43) explains, ‘since it is better to be rich than to be poor, morality is conceptualized in terms of wealth. Since it is better to be strong than to be weak, we expect to see morality conceptualized as strength. Because it is better to be healthy than sick, it is no surprise to see morality conceptualized in terms of health and attendant concepts like cleanliness and purity. Since it is better to be cared for than uncared for, it seems natural to find morality conceptualized as nurturance.’ Therefore, key root metaphors for the concept of morality are all based in widely shared experiential accounts of human wellbeing, including MORALITY IS PURITY, MORALITY IS STRENGTH, MORALITY IS HEALTH, and MORALITY IS PROTECTION/NURTURANCE (Lakoff, Espenson and Schwartz, 1991; Lakoff and Johnson, 1999; Lakoff, 2002).

The issue of the metaphoric conceptualization of morality has already been recognized within discussions of the influence of metaphor on sustainability (Romaine, 1996; Painter-Morland, Demuijnck and Ornati, 2017). Moral principles have been shown to inform conceptions that are at the heart of sustainability, such as conceptions of the natural environment and our relationship with it (Romaine, 1996). Romaine (1996) suggests that competing perspectives on sustainability action are attributable to competing systems of moral metaphors. In a similar vein, Painter-Morland, Demuijnck and Ornati (2017) suggest that the business case framing of corporate sustainability is *explained* by the dominance of the WELLBEING IS WEALTH root metaphor within the realm of business theory and practice, with wealth implicitly understood as *monetary wealth*.

The business case for sustainable supply chain management has similarly been identified as a key concern within sustainable supply chain theory and has been seen to be limited in terms of its the pursuit of sustainable development (Gao and Bansal, 2013; Montabon, Pagell and Wu, 2016). The metaphor analysis suggested that through the complex interactions of the metaphorical conceptualizations of SUPPLY CHAIN IS AN ORGANISM and SUSTAINABILITY IS HEALTH, the sustainable supply chain can be conceptualized as a healthy organism (SUSTAINABLE SUPPLY CHAIN IS A HEALTHY ORGANISM), where supply chain sustainability means the ‘healthiness’ of the supply chain. Combined with assumptions rooted in the moral metaphor that WELLBEING IS WEALTH (Lakoff and Johnson, 1999), the *healthiness* of the supply chain can be logically understood as meaning economic *viability* (Khalid and Seuring, 2019).

This moral metaphor therefore justifies conceptualizations of supply chain sustainability as assuring the wellbeing of all supply chain stakeholders by being sure to explicitly account first and foremost for an organization’s economic responsibilities as *the foundation* of sustainability (Carroll, 1979; Carter and Rogers, 2008). Pagell and Shevchenko (2014) have similarly observed the dominance of the normative assumption that profits are the ultimate assessment of supply chain performance and that managers and shareholders are the most important stakeholders. The interaction of these metaphors creates a metaphorical common sense in which it can become difficult to logically assume, or reason, that true sustainability may require or result in some firms going ‘out of business to be replaced by sustainable new entrants’ (i.e., to *die*) (Montabon *et al.*, 2016, p.12).

This section has further reflected on how metaphoric influences may be constraining sustainable supply chain theory development by introducing the concepts of primary metaphors and moral metaphors into discussions of the assumptions that currently characterize the sustainable supply chain field. Based on core tenets of conceptual metaphor

theory this section has positioned metaphor as a pervasive influence in constructing the metaphorical common sense that informs the assumption ground of sustainable supply chain theory.

5.5. Conclusions.

A key assumption underpinning the view of the constraining capabilities of metaphor is that metaphorical conceptualizations are central to how human beings make sense of the world, and therefore that metaphorical thought is often unconscious, embodied, and deeply seated. In the context of theorizing, metaphors have been conceptualized as coherent underlying images of a phenomenon of interest that can unite and underpin a school of thought. But it is important to recognize that these, too, are informed by more fundamental metaphorical conceptualizations of subjective experiences (primary metaphors) that together build a rich picture and complex assumption ground from which theory is developed.

The systematic metaphor analysis presented in this chapter was undertaken on the assumption that the sustainable supply chain field is similarly informed by underlying root metaphors that conceptualize its central concepts (supply chain, and sustainability) in a way which informs the construction of the meaning of sustainable supply chains. *Sustainability* and *supply chain* are abstract concepts that have no direct referents in the real world. They are conceptualised in terms of other concepts or domains of knowledge with which we are more familiar (i.e., metaphorically). The presentation of the results in section 5.4 illustrated the linguistic metaphors that help scholars to construct and describe features of these phenomena through metaphorical nouns, as well as to describe their attributes through metaphorical adjectives, and to identify relevant means of interacting and controlling them through metaphorical verbs.

Systematic metaphor analysis operationalizes a perspective on metaphor as a cognitively fundamental process of human, and therefore scholarly, understanding. Through its systematic nature, including the guidance provided by the Metaphor Identification Procedure, it offers an accessible means for sustainable supply chain scholars to identify and therefore reflect upon their own metaphoric conceptualisations.

However, the process of constructing the root metaphors is an interpretative act, and like other qualitative methods is dependent on ‘the interplay between the ability of the researcher to understand the sense of things and the rules of the methodology’ (Schmitt, 2005, p. 358). While the Metaphor Identification Procedure (MIP) (Pragglejazz Group, 2007) has proved a helpful, supported, and popular procedure for systematically identifying metaphors at the level of language (the first major stage of the systematic metaphor analysis procedure), a comparable systematic procedure for identifying and discerning root metaphors (the second stage) is relatively less well established.

This has led Semino, Heywood and Short (2004, p. 1274) to criticise tendencies towards ‘extrapolating too readily from lists of decontextualized linguistic expressions to cognitive structures which are assigned a particular heading’. They suggest this can ‘lead one down a single interpretative route when others are also possible’. To illustrate this point, they highlighted Lakoff’s (1993) conceptual metaphor, LIFE IS A BUSINESS. The authors argue that while the linguistic expression ‘it’s time to take stock of my life’ seems a relatively uncontroversial example of the root metaphor, LIFE IS A BUSINESS, the other linguistic expression Lakoff offered - ‘I want to get a lot out of life’ - is deemed less satisfactory. For Semino, Heywood and Short (2004, p. 1274), the relationship with the business source domain is ‘not at all obvious and Lakoff does not spell out his rationale for suggesting that such a connection exists’. These critiques illustrate perceptions of the relative weakness of the processes to move from linguistic to root metaphors.

The root metaphors identified in this chapter are therefore a source of potential dispute. Many of the root metaphors identified represent relatively general categories (politics, society, warfare, physical things). On the one hand, this may be a benefit, as this higher-level of abstraction may allow for a more accurate identification of the source domain for linguistic metaphors. However, it may also hinder the usefulness of the analysis in failing to provide a more nuanced picture of the cognitively fundamental understandings of sustainable supply chains within sustainable supply chain theory. This alludes to Alvesson's (1993) concept of second-level metaphors, which are 'the metaphors behind the metaphors' (Alvesson and Sandberg, 2011, p. 257). For example, what *type* of machine is the supply chain conceptualized as? Wieland (2021) seems to imply two second level metaphors behind the metaphor of supply chain as an machine – a subway system, and a computer. Alternatively, what type of political system is the supply chain conceptualized as? A totalitarian system, or a democratic system?

Similarly, although the construction of the metaphoric landscape in section 5.4. has sought to illustrate the interactions between metaphoric conceptualizations of sustainability and supply chain, it may still serve to oversimplify the metaphorical landscape. Although it has been suggested that dominant root metaphors may lead scholars to prioritize research and theorizing around certain issues while distracting them from others, it is unlikely that any one root metaphor would ever underpin a single article, or study, or unilaterally inform the theorizing of single scholar (Andriessen and Gubbins, 2009; Boxenbaum and Rouleau, 2011). Boxenbaum and Rouleau (2011) have illustrated how theories have been produced from creative combinations of elements from a variety of metaphorical visions of organizational phenomena.

Moreover, the strengths of the arguments for the ways in which the root metaphors, including their associated primary metaphors, may constrain sustainable supply chain theory

development may be challenged on the basis that conventionalized metaphors have a new, stable meaning within the community in which it is used, and which is no longer associated with its metaphorical origins (Schoeneborn, Blaschke and Kaufmann, 2013). However, the suggestion of the potentially constraining influence of conventionalized metaphors is justified on the basis that the deadness of a metaphor does not necessarily eliminate the metaphorical element (McCloskey, 1985). Systematic metaphor analysis therefore highlights conventionalized metaphors which nonetheless have metaphoric potential, particularly for those who may be newly exposed to metaphoric concepts at the heart of sustainable supply chain theory and therefore for whom the conventionalized meaning within the field may be unknown.

Therefore, while some of the root metaphors of supply chains identified through the systematic metaphor analysis (e.g., SUPPLY CHAIN IS A MACHINE) may not immediately resonate with sustainable supply chain scholars, some mechanistic assumptions associated with linguistic metaphors sourced from the source domain of machine may nonetheless inform the assumption ground of the field. Recent work has begun to draw explicit attention to the mechanistic assumptions that underpin sustainable supply chain theorizing. For example, Wieland (2021, pp. 68, 59) suggested that ‘we have too often imagined the supply chain as a rigid system, similar to a machine’ which can be managed deterministically, ‘just like an engineer would treat a machine they were designing or controlling’.

By taking a metaphor perspective on the challenges facing sustainable supply chain theory development, this chapter has provided a metaphoric explanation for some of the dominant trends, assumptions and logics that have characterized sustainable supply chain theory development. In sum, the findings align with existing critiques of existing approaches in sustainable supply chain theory (Pagell and Shevchenko, 2014a; Matthews *et al.*, 2016; Montabon, Pagell and Wu, 2016). But by suggesting a metaphoric explanation for these

existing approaches, it reinforces the suggestion that metaphorical conceptualizations within sustainable supply chain theory are an important locus of change for the development of sustainable supply chain theory. This chapter has depicted the use of the procedure of systematic metaphor analysis for bringing the presence and nature of metaphorical conceptualizations within sustainable supply chain theory to the conscious level (Schmitt, 2005). It has therefore also provided the first attempt to construct the metaphoric landscape of the field.

Understanding the potential influences and limitations of the metaphorical conceptualizations that inform thinking, judgements and theoretical activities is an important first step in sustainable supply chain theory development, but is unlikely to lead to change on its own (Painter-Morland, Demuijnck and Ornati, 2017). The problematization perspective on theorizing also suggests that existing metaphors in a field can be problematized by leveraging the liberating capabilities of alternative confrontational metaphors which can serve as new creative opportunities for generating new insight into supply chain phenomena (Alvesson and Sandberg, 2011). Chapters 6 and 7 therefore discuss inquiries which have proceeded from this assumption.

Chapter 6 – A reflection. Problematizing the study’s intention to propose new metaphors.

6.1. Introduction.

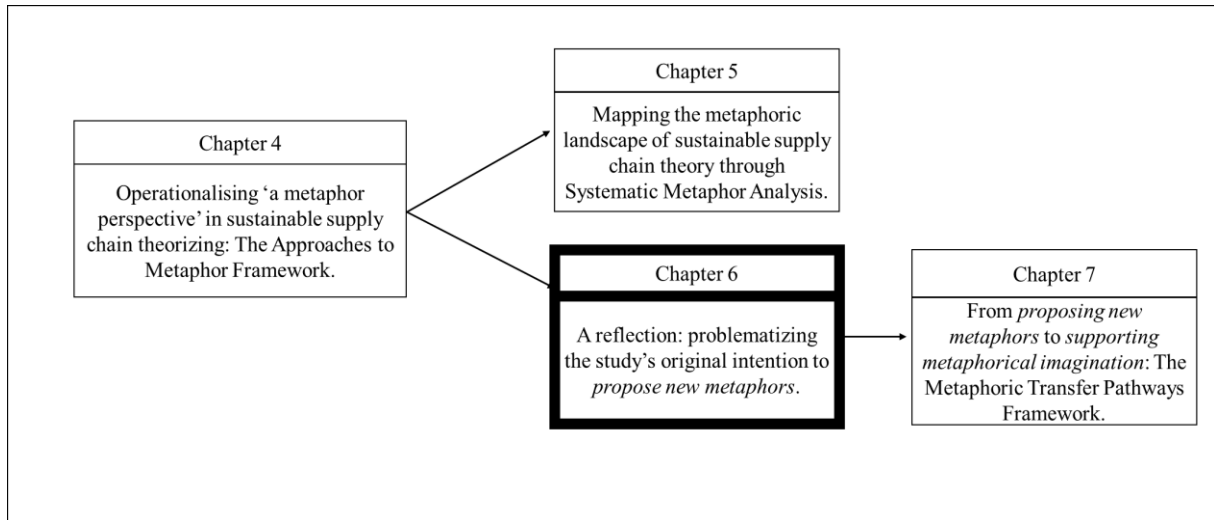
Inspired by the liberating capabilities of metaphor, one of the study’s foundational assumptions was that new metaphors could liberate scholars’ thinking about sustainable supply chains. They could dislodge existing metaphoric visions of supply chains and help to generate new images of supply chains in a sustainable world. Therefore, efforts to operationalize the study’s third objective *to harness the liberating potential of metaphor for the benefit of sustainable supply chain theory development* centred on the search for new metaphors.

These efforts had been inspired by a well-established tradition within organizational literature in which organizational scholars have similarly sought to identify and propose new metaphors for the benefit of organizational theory development (e.g., McCabe, 2016). A similar tradition is also reflected in multi-disciplinary sustainability literature, which is peppered with calls for new metaphors that are (more) compatible with a sustainable socio-ecological order (e.g., Jones, 2016). The study’s intention to propose new metaphors was therefore also consistent with approaches to metaphor depicted in the Counterproposal quadrant of the Approaches to Metaphor framework (Figure 4) which was depicted in chapter 4.

However, efforts to propose new metaphors revealed challenging and unexpected insights that ultimately questioned the logic and value of this approach. The aim of this chapter is therefore to reflect upon why this study’s efforts to achieve its final objective through *proposing new metaphors* was simultaneously unsuccessful and insightful. Figure 8 depicts

the position of the ensuing discussion (chapter 6) in relation to the thesis' previous and subsequent chapters.

Figure 8 Relationship between the four chapters that depict the study's key conceptual work and knowledge claims - Chapter 6.



The decision to capture and explore these experiences within this chapter is consistent with the principles of convincingness (Golden-Biddle and Locke, 1993). It demonstrates the study's ongoing reflection in pursuit of a *convincing* contribution to the field and provides a transparent and authentic account of the challenges the study faced (Golden-Biddle and Locke, 1993). It also demonstrates that the specific nature of this study's research approach has been vital in enabling a more critical reflection on some of the taken-for-granted assumptions in dominant literature on metaphor and theorizing (Cornelissen *et al.*, 2008; Schoeneborn, Blaschke and Kaufmann, 2013). It may therefore provide useful insights into 'what not to do' for other scholars who may similarly be new to working with this literature.

The remainder of the chapter is organized as follows. Section 6.2 depicts the literature which stimulated the original development of the objective *to propose new metaphors*. Section 6.3 describes the research activities that were designed to achieve this objective. Section 6.4 describes the challenging questions and unexpected insights that emerged through those experiences. Section 6.5. demonstrates a return to the literature to make sense of those

unexpected insights, before section 6.6. introduces the logic of taking the study in a new, more convincing, direction.

6.2. Harnessing the liberating potential of metaphor by proposing new metaphors.

Some scholars have taken issue with the predominance of the idea that metaphors can be used consciously to liberate thinking (Chia, 1996). Chia (1996, p. 128) suggests that the focus on the conscious use of metaphors as analytical and theoretical tools has had the effect of ‘unwittingly obscuring’ an important recognition that language is already entirely metaphorical. Nonetheless, a major and longstanding tradition has highlighted the positive benefits of active engagement with alternative metaphors as means of re-framing a situation in order to generate new perspectives (Schon, 1979; Morgan, 1980, 1997; Weick, 1989a; Alvesson and Sandberg, 2011). Schon (1979) suggested that metaphor is a process by which new perspectives on the world come into existence. Barrett and Cooperrider (1990, p. 222) suggested that metaphor acts as ‘an invitation to see the world anew’. Metaphors can stimulate imagination, creativity and generate new insights that were inconceivable before (Cornelissen, 2005; Boxenbaum and Rouleau, 2011; Cornelissen and Durand, 2014).

Schon’s (1979) notion of ‘generative metaphor’ has been central to the view of the liberating capability of metaphor (Barrett and Cooperrider, 1990; Steger, 2007). Writing from the perspective of social policy, his thesis was that the specific societal ‘problems’ which social policy strives to address are constructed through metaphor and that metaphor can therefore be a tool of problem re-setting, or *frame re-structuring*. Within the context of organizational conflict and change, Barrett and Cooperrider (1990) positioned generative metaphor as a ‘way of supporting the cultivation of fresh perceptions’. They demonstrated the use of metaphor as a way of helping a group of employees to liberate itself from existing negative and defensive routines.

A similar logic underpinned Andriessen's (2007) work with alternative metaphors for helping organizations to develop alternative and improved approaches to managing knowledge. He demonstrated that metaphors direct the discourse of knowledge and knowledge management within an organization. He conducted an exercise which asked employees of a public organization to work with alternative metaphors for knowledge in order to diagnose and offer solutions to the organization's knowledge management challenges. While the metaphor, KNOWLEDGE AS WATER, directed participants to view the organization's knowledge as something that is stagnant and 'does not flow,' the KNOWLEDGE AS LOVE metaphor directed participants to view knowledge as being the result of quality relationships. The author concluded that the choice of metaphor strongly directs the conversation about problems and solutions related to knowledge in organizations and therefore acts as a catalyst for new ideas (Cornelissen, 2005; Boxenbaum and Rouleau, 2011).

These perspectives are supported by evidence from psychological studies which have similarly demonstrated the impact of metaphor on everyday reasoning (Thibodeau and Boroditsky, 2011, 2013, 2015). Thibodeau and Boroditsky (2011) demonstrated through experimentation that metaphors create knowledge structures which invite inferences which are consistent with those structures. Specifically, they explored how alternative metaphoric framings for crime influenced respondents' reasoning about appropriate solutions for managing crime. When crime was framed as a virus, participants proposed the need to investigate the root causes of the issue and to institute social reforms which would *treat* the problem. When crime was framed as a beast, participants were found to be more likely to propose addressing the issue of crime through enforcement, by hiring more police officers and building jails to *catch* and *cage* the criminals.

In a subsequent study, Thibodeau and Boroditsky (2013) demonstrated that metaphors not only directed participants' own suggested solutions, but also directed participants' selection

of a preferred solution among a range of options. Through demonstrating that very few of the participants' showed awareness of the existence of any metaphors as part of the experiment exercise, the authors thus also emphasized the extent to which metaphors can influence reasoning covertly. Such evidence points to the value of active and conscious engagements with alternative, novel metaphoric frames as a means of re-framing a phenomenon and generating new perspectives on it.

Organizational theorists have similarly sought to operationalize this capability of metaphor for the benefit of organizational theory development. This has manifested in a significant tradition of *proposing new metaphors* for theorizing organizational phenomena. For example, McCabe (2016) proposed the metaphor of organizations as Wonderland and Kemp (2016) proposed the metaphors of organizations as femicide and as justice. In the environmental context, Jermier and Forbes (2016) proposed the metaphors of organizations as water exploiters and as water keepers while Jones (2016) has proposed the metaphor of the biophilic organization. These propositions have been accompanied by rich and creative explications of the meanings of these new metaphors.

The argumentation behind these authors' propositions is that these novel metaphors point towards features that are, according to the authors, left out of dominant metaphors and have therefore been side-lined or ignored in organizational theorizing (McCabe, 2016). For example, McCabe (2016, p. 945) argued that the Wonderland metaphor '*places at centre stage* issues such as absurdity, irrationality, uncertainty and disorder [emphasis added]'. The author suggests that these are conditions which need to be understood as an 'everyday experience' for many organizations, but which have otherwise been largely omitted from organizational theorizing.

Similarly, Jermier and Forbes (2016, p. 1001) suggest that the water keeper metaphor ‘*brings needed attention to water problems and invites further research on activist organizations [emphasis added]*’, while the water exploiter metaphor is advanced to ‘*enhance reflection on dominating organizations that create severe ecosystem stress [emphasis added]*’ (Jermier and Forbes, 2016, p. 1009). These extracts demonstrate the assumption that a key value of novel metaphors is in their ability to highlight specific features of organizations that the authors have identified as important, and which have been previously hidden, under-explored or under-represented in organizational theory.

Based on this literature, the present study similarly assumed that an active awareness of metaphor’s capabilities to constrain and liberate thinking, and an active engagement with novel metaphors, could similarly serve to re-frame thinking about sustainable supply chains. Specifically, it was assumed that a valuable contribution of the study would be to identify and propose novel metaphors which could be ‘given’ to the community to challenge the existing dominant metaphors.

These assumptions drove the development of a research design that sought to achieve two goals. The first goal related to demonstrating the effect of metaphors in shaping thinking (in line with Andriessen, 2007; Thibodeau and Boroditsky, 2011). The second goal related to generating new metaphors which would direct the discourse of sustainable supply chains, and support the theorizing of supply chains, in different (and more sustainable) ways (in line with Jermier and Forbes, 2016; McCabe, 2016). The shape of these activities is further described and justified in section 6.3.

6.3. Research activities to *propose new metaphors*.

Inspired by the research literature outlined in section 6.2., efforts to achieve the study’s objective of proposing novel metaphors consisted of two inter-related activities. These

activities have also been introduced in section 3.3.2 of this thesis. The first activity related to conceptual work to envision novel metaphors that would re-frame sustainable supply chains in a way which emphasized currently under-theorized perspectives. The second related to interactive engagement with academic members of the sustainable supply chain community through workshops and interviews. These are described further in sections 6.3.1. and 6.3.2.

6.3.1. Conceptual work to identify and propose novel metaphors using the Sustainability Paradigms Framework (Matthews *et al.*, 2016).

The approach to identifying and proposing novel metaphors for the sustainable supply chain field was particularly informed by recognition that sustainability is an essentially contested concept (Thompson, 2011; Matthews *et al.*, 2016). According to Matthews *et al.* (2016), the progress of theory related to sustainable supply chains requires a paradigmatic approach which recognizes alternative perspectives on what sustainability is and how it is to be achieved. Such alternative perspectives on sustainability have been formalised for the supply chain community within the Sustainability Paradigms Framework (Matthews *et al.*, 2016), which has sought to guide and stimulate theory development across alternative and competing assumption grounds. Efforts to identify and propose novel metaphors that could stimulate new perspectives on sustainable supply chains therefore similarly assumed the need for *multiple* metaphors which could variously reflect and endorse features of sustainable supply chains according to different paradigmatic perspectives (Matthews *et al.*, 2016). Therefore, extending the sentiment of Morgan (1980), who illustrated how alternative metaphors characterize and perpetuate the assumptions of alternative sociological paradigms, and Matthews *et al.* (2016), who called for sustainable supply chain research from four different paradigms, it was assumed that the sustainable supply chain field would benefit *from a portfolio of new* metaphors.

On that basis, novel metaphors were generated through consideration of several inter-related dimensions: *what were the limitations of existing metaphors, and what metaphors could help to overcome these limitations? What metaphors from the published literature could be relevant? What elements of sustainable supply chains do we want to better highlight, according to alternative paradigmatic assumptions? Which metaphors are most shocking and illustrative for countering dominant frames?* Four novel metaphors were ultimately identified. They were SUPPLY CHAINS as SHARED FUTURE; SUPPLY CHAIN as GARDENING TOOL; SUPPLY CHAIN as BRAIN and SUSTAINABLE SUPPLY CHAIN MANAGEMENT as POLITICAL CAMPAIGNING.

In the style of Jermier and Forbes (2016), detailed accounts of the perceived meaning of each of these metaphors were developed. These are captured in Appendix 3. More concise accounts of each metaphor were also developed for the purposes of sharing and exploring these metaphors through engagements with the academic community (Figure 9). The next section describes these engagements with the academic community.

Figure 9 Four novel metaphors.

SUPPLY CHAIN AS A SHARED FUTURE: *This metaphor helps to shift the view of the interaction between the supply chain and its environment from being interacting but distinct, towards being integrated. The view emphasizes the importance of co-creation and collaboration on the assumption that an organism's survival (supply chain survival) is ultimately 'survival with,' never 'survival against' the environment. This metaphor would emphasize the fundamental co-existence of supply chains within the broader political economic system, and thus highlights*

the assumption that sustainable supply chain is fundamentally dependent upon a socio-ecologically effective political economy – a broader system level concern that has traditionally been seen as extraneous to the supply chain discipline.

SUPPLY CHAIN AS A BRAIN: *This metaphor extends the animate being metaphor to emphasize concepts of negative feedback, regulation and limits as means to control supply chain behaviour based on what must not occur (limits). As a brain, a learning supply chain constructs supply chain intelligence as emergent. Instead of requiring tight control and leadership, supply chain management requires a sense of vision, norms, values, and limits that provide a space within which learning, and innovation can occur. It therefore emphasizes not sustainability goals to be achieved, but rather accepted sustainability limits to guide behaviour.*

SUPPLY CHAIN AS A GARDENING TOOL: *This metaphor re-orders our thinking about the purpose of the supply chain beyond its conventional competitive motives. It may be useful in supporting and normalizing an ecologically dominant way of thinking about supply chains. It re-focuses the purpose of the supply chain as a necessary instrument to ensure natural flourishing. The tool has limited value beyond its success in enabling a garden to flourish. Its purpose is accepted as that which assures the flourishing of the garden. This metaphor therefore emphasizes a consideration of the fitness of the tool (supply chain) to do the job it is required to do; to evaluate the tool in terms of its flourishing outcomes (social and environmental wellbeing), not in terms of its*

activities; and emphasizes a requirement for a skilled and effective 'gardener' (focal company) to use the tool appropriately.

SUSTAINABLE SUPPLY CHAIN MANAGEMENT AS POLITICAL CAMPAIGNING:

This metaphor may be useful in helping us to take a more process-view, rather than a content-based view of sustainable supply chain management (how to achieve it, rather than what is it) as called for by recent authors. The political metaphor is already established in supply chain management discourse and therefore may be elaborated to stimulate new insights and suggestions about how supply chain managers and key stakeholders might transform supply chains in terms of the sustainability agenda. The metaphor emphasizes a much more engaged, individual, and activist perspective on supply chain management activities which emphasize the need to engage interest and commitment to sustainability agendas and policies to overcome resistance and drive supply chain change. In this regard it may facilitate and sanction a richer and more widespread engagement with alternative theoretical lenses, such as behavioural theory of the firm which is consistent with the political arena metaphor.

6.3.2. Identifying and proposing new metaphors through engagements with the academic community.

Efforts to propose novel metaphors also included engagements with the community of sustainable supply chain academics to facilitate a participative, interactive process of identifying and proposing novel metaphors. As has been depicted in table 3, engagements with the academic community took the form of two interactive workshops and four one-to-

one interviews. These engagements aimed to do two things. First, inspired by Andriessen (2007), they sought to demonstrate the extent to which metaphors direct conversations and reasoning about sustainable supply chains and therefore to highlight the relevance of thinking more explicitly about metaphors within sustainable supply chain theorizing. Second, they were designed to stimulate new metaphors that could be adopted by the community and liberate thinking about supply chains.

In line with these purposes, both the workshops and interviews were structured around two key exercises. The first related to thinking about supply chains through alternative metaphoric lenses and evaluating the respective usefulness of alternative lenses for the ways in which they directed thinking about sustainable supply chains. In the workshops, scholars were asked to think about and articulate the meaning of sustainable supply chain management through the lenses of two alternative metaphors – SUSTAINABLE SUPPLY CHAIN AS MACHINE and SUSTAINABLE SUPPLY CHAIN AS JOURNEY. They were also asked to reflect upon the usefulness of these metaphors for thinking about sustainable supply chains. In the interviews, scholars were asked to reflect upon the metaphors that had been identified through the systematic metaphor analysis, rather than just the journey and machine metaphors.

The second exercise asked scholars to propose alternative metaphors for sustainable supply chains. In the interviews, scholars were asked to reflect upon the four novel metaphors developed using the Sustainability Paradigms Framework (Figure 9), as well as to suggest their own. At the end of the workshops and the interviews scholars were asked to give their views on the use and value of metaphor in thinking about sustainable supply chains.

6.4. Some evidence of *plausibility* and *criticality* through engagements with the academic community.

In many ways these encounters achieved the intended outcomes. In so doing, they served to suggest the plausibility of this study's concern with metaphor in the sustainable supply chain field, as well as provide evidence to enhance the plausibility of this thesis.

Through the first exercise, it was possible to demonstrate how metaphors directed scholars' reasoning and conversations about sustainable supply chains in alternate ways. The most notable differentiator between the focus enabled by the machine metaphor versus the journey metaphor was the relative emphasis on *practices* and *outputs* versus *process*. While the machine metaphor enables discussions about sustainable supply chain practices and measurement of outputs, the journey metaphor enables discussions of the process. This is captured by a comment from one workshop participant which is stated below:

'For me, thinking of the machine and journey metaphor is good re: thinking about process focus (journey) versus result focus (machine), where the journey will help you/matters as it can help you to formulate a sust. [sic] supply chain trajectory. The machine will not...' [Workshop Participant]

Table 6 captures the core suggestions provided by the academic community related to the perceived benefits and limitations of the journey and machine metaphors for thinking about sustainable supply chain. It demonstrates that, through different metaphorical framings of sustainable supply chains, different sustainable supply chain issues become pertinent.

Table 6 Summary of academics' perceptions of the benefits and limitations of *machine* and *journey* metaphors.

SUSTAINABLE SUPPLY CHAIN SUSTAINABLE SUPPLY

	AS MACHINE	CHAIN AS JOURNEY
Benefits	Focuses on cause and effect; positive associations of agency, as supply chain can be 'fixed;.	Dynamic; positive associations of potential for progress.
Limitations	Linearity rather than circularity; static rather than dynamic; oversimplification; de-humanisation.	Lack of clarity of end goal; sanctions insufficiently transformative action by focusing on action rather than results.

Through the second exercise, the scholars also proposed several novel metaphors. Table 7 captures the novel metaphors proposed by the academic community. It lists the novel metaphors as they were named or drawn by academics, along with quotations that explained their meaning. Explanations of the metaphors were not provided in all instances.

1 **Table 7 New metaphors proposed by the academic community.**

Academic engagement	New metaphors proposed.
Academic interviews	<p>SUPPLY CHAIN AS AN ORGAN OF A BODY [AP-SM] (<i>'all parts need to be integrated and work together towards the shared goal.'</i>)</p> <p>SUPPLY CHAIN AS AN ORCHESTRA [AP-SM]</p> <p>SUPPLY CHAIN AS SHARED DENIAL [SL-O/SCM] (<i>'that's really how I think [supply chains] are now ...Supply chains are convenient places to hide things'</i>)</p> <p>SUPPLY CHAIN AS YOGA [SL-O/SCM] (<i>'we need slow supply chains'</i>)</p> <p>SUPPLY CHAIN AS A CRAFT FAIR [P-OM]</p>
Academic workshops	<p>SUPPLY CHAIN AS SOUND WAVES (<i>'what does sustainability sound like?'</i>)</p> <p>SUPPLY CHAIN AS A GARDEN</p> <p>SUPPLY CHAIN AS A HUMAN (<i>'[an] integrated system but with a limited lifespan.'</i>)</p> <p>SUPPLY CHAIN AS AN ANIMAL</p> <p>SUPPLY CHAIN AS EQUITABILITY</p> <p>SUPPLY CHAIN AS A RAINFOREST (<i>'a sustainable ecosystem, damaged by outside interference'</i>)</p> <p>SUPPLY CHAIN AS LIFECYCLE (BIRTH-DEATH).</p> <p>SUPPLY CHAIN AS (IM)BALANCE.</p> <p>SUPPLY CHAIN AS DREAMS.</p> <p>SUPPLY CHAIN AS FLOURISHING</p>



Most positively, the engagements demonstrated the plausibility of more explicit and informed consideration of metaphor within the sustainable supply chain field. Table 8 provides some illustrative quotations from responses provided by academics which suggest that the engagements had served to plausibly highlight the issue of metaphors, their influence, and how they work to direct thinking.

Table 8 Illustrative quotations of academics' responses to the metaphoric exercises.

'I don't think I really used metaphors before, but images like arrows [drawing of a straight-lined arrow] for a SC or [drawing of circular arrow] for circular SC...I really liked this session and will keep in mind what I learnt today.' [Workshop Participant]

'I had not consider [sic] metaphor before. Don't know if I will do it. But it did change the verbs I usually use, or at least the previous reflexions' [Workshop Participant]

'I felt that it was more helpful than I expected... I did really enjoy the hour and I did find it all very thought-provoking. I think I felt that we sometimes just implicitly think things, and people interpret what we say in their way, and we do not realise that we are saying might mean something to them that we didn't mean to say. So, I think if we use metaphors more explicitly then we will be communicating more effectively because we'll know what we're doing. I think doing it without realising we've been doing it we've been giving out all sorts of messages that we didn't intend...' [P-OM]

'I will reflect on how these dominant metaphors come out through my writing and language more generally' [Workshop Participant]

'Metaphors definitely give affordances for thinking about SSCM. Be interesting to uncover some new metaphors.' [Workshop Participant]

One of the most interesting encounters demonstrated the moment at which one scholar identified and acknowledged the influence of the metaphor of SUPPLY CHAIN IS A MACHINE. The following quotation illustrates the academic's unravelling of the metaphor in their own mind:

'I never really thought about supply chain as machine, though. So, although I do use the word supply chain 'performance' a lot, I wouldn't say that I had therefore thought it was a machine...But having said that, I do think that that does become quite mechanistic. You know, you have the sort of...you do 'this' and you get 'that,' which is a mechanistic thing, isn't it? But I hadn't previously thought of it that way' [P-OM]

The same academic also alluded to an assumption of the positive valuation of certain mechanistic performance measures:

'I think people do use the word, for example 'supply chain efficiency' but they're not very clear what they mean by it, so to me that's quite vague really. Students, in courses, when you're asking them about performance measures, they'll often say 'efficiency' by which they just mean being 'good'' [P-OM]

Through this observation, P-OM depicts instances wherein the meaning of 'efficiency' has become value-laden. From a metaphor perspective, P-OM's observation can be interpreted as illustrating that students of supply chain management have the potential to conflate 'efficiency' with 'good'. The literal meaning of efficiency refers explicitly to the ratio of useful work achieved to energy expended, or as P-OM described it *'inputs over outputs'* which in the mechanics context is valued positively. However, a conflation of 'efficiency' with 'good' in the sustainable supply chain context may have implications for the achievement of true sustainability. This aligns with some of the evidence and arguments presented in chapter 5.

In sum, these engagements with the academic community provided some encouraging support for the *plausibility* and *criticality* of this study and therefore the potential value of the work for the community. This was combined, however, with unexpected insights and unanswered questions. Together, these provided the foundation for the emergence of a new interpretation of how to achieve the study's third objective to harness the liberating potential of metaphor for the benefit of sustainable supply chain theory development. This is explored further in the next sections.

6.5. Unexpected insight and unanswered questions.

Although an awareness of metaphoric underpinnings and influences is an important part of freeing oneself of the constraints of dominant metaphoric lenses, the literature suggests that it is also important to work actively with metaphors that will (metaphorically) dissolve (Ehrenfeld, 2003), confront (Alvesson and Sandberg, 2011) or compete with (Hardin, 1974) existing ways of thinking and seeing. Styled in this tradition, this study's efforts to harness the liberating potential of metaphor by proposing novel metaphors through conceptual work and engagement with the academic community could be said to have been successful on some level.

Through the workshops and interviews, scholars proposed a rich array of metaphors (table 7). Moreover, the processes of identifying and developing four novel metaphors through the Sustainability Paradigms Framework (Matthews *et al.*, 2016) was a personally illuminating experience. Working with each metaphor individually underpinned and prompted further exploration of alternative theoretical issues in sustainable supply chain management and related literature that had otherwise been side-lined. This seemed to reinforce the value of adopting conflicting frames as an activity in dislodging dominant frames and directing attention towards otherwise under-explored issues.

However, the experiences also prompted additional critical reflections that challenged whether the proposition of these novel metaphors represented a convincing means of harnessing the liberating potential of metaphor for the true benefit of sustainable supply chain theory development.

The first set of reflections surrounded the validity of the metaphors themselves. Why were *these* metaphors identified? Why should the sustainable supply community *accept these* metaphors? What specific *value* do these metaphors bring to the community? Is that value greater than the existing metaphors? And more importantly *does* that value relate to the goal of liberating thinking on sustainable supply chains? How can we *know* if does or not? Will these *really* shift the dominant logic? The second set of reflections pertained to the means of identifying them. *How* were they identified? In fact, some scholars had experienced difficulties in identifying and proposing new metaphors.

These questions therefore similarly invited further critical reflection on the literature that had inspired the intention to propose new metaphors in the first place. For example, how and why did McCabe (2016) identify Wonderland, as opposed to another metaphor that reflected and highlighted *absurdity*? What impact has the Wonderland metaphor had on liberating organization theorists' thinking and thus shifting the dominant logic of organizational theorizing away from the 'rational model' (McCabe, 2016)? What impact has it had on theory development?

Moreover, academic participants offered some unexpected responses to the metaphors which had been presented to them through the interviews. The study had assumed that encountering new metaphors would stimulate scholars' thinking in line with how the metaphors had originally been envisioned (described in section 6.3.1 and Appendix 3.1.). This was further

underpinned by the related assumption that metaphors would shock scholars into a cognitive shift which would re-cast sustainable supply chains in a new light.

However, instead, the interviews suggested that scholars' interpretation of the metaphors was informed by their pre-existing assumptions. Scholars appeared to be enthusiastic about the metaphors which they interpreted as reflecting or endorsing their existing ideas about how supply chains are or should be. Table 9 captures quotations which illustrate scholars' respective endorsements of some of the metaphors that were presented to them during the interviews.

Table 9 Illustrative quotations of academics' endorsement of certain metaphors.

Metaphor	Illustrative quotations
SUPPLY CHAIN AS A POLITICAL SYSTEM	<ul style="list-style-type: none"> <li>• <i>'You can think of supply chain as its own political system, and I think that that's a really powerful one, given the power and reach of some of these supply chains, they are more powerful than some political systems. There needs to be a better acknowledgement of that. You know it's great to say that a company like Apple has pushed regulation forward, but they've only pushed it forward as much as is comfortable for them...' [L-Man.].</i> <li>• <i>'the ...one that I think is probably more realistic is probably around the political system...Everybody's in it and contributing to it, there will be rule makers...just as there are in any political system...there will be people who make the rules...we appoint MPs to make decisions for us, in a supply chain we appoint focal companies to make those decisions (and I don't agree with that necessarily, 'cause I don't know what their motive is for it)' [SL-OM/SCM].</i> <li>• <i>'The more we talk about sustainable supply chain, we need to talk about regulation, we need to talk about NGOs and the role of these other actors, and this leads to a discussion on power and politics that goes beyond that more machine type of efficiency and focused supply chain studies... [AP-SM].</i>
SUPPLY CHAIN AS A SOCIAL COMMUNITY	<ul style="list-style-type: none"> <li>• <i>'Yes, I think, to me that's what it's all about. People are the most important things in this world. I know we can't have people if we don't have an environment that they can survive in, but happy people...people who can thrive and flourish in the environment that they're in is what really matters to me. So, supply chain collaboration, supply chain partnerships, those are the things that really matter, because it's only through relationships etcetera that we really make progress' [P-OM]</i>

**SUSTAINABLE SUPPLY
CHAIN AS A SHARED
FUTURE**

- *'I think that's lovely... if you had all of the voices, so all of the marginalised, silenced and silent voices. And I say silenced because...the environment can't speak for itself but doesn't mean it shouldn't have a voice. So, to me this is one of a lot of hope.'* [L-Man.]

One particularly notable encounter occurred through discussion of the gardening tool metaphor. This metaphor had been identified as a way of shifting the perspective of sustainable supply chain thinking from the *use* of sustainability *for* improved supply chain performance, towards the *use* of the supply chain *for* socio-ecological sustainability. The tool metaphor has been identified based on insights by Barter and Russell (2013) who observed that leaders of sustainable organizations conceived of their organization as a tool that should exist only in so far as it was useful to society.

However, one of the academic respondents (who described themselves as a critical theorist) suggested that they saw the gardening tool metaphor as a:

'Big and heavy combine harvester coming digging everything up, rather than planting: the reaper rather than the sower. I think supply chains are very often about ...extracting and taking the spoils and rewards and using them, rather than planting, creating, and surplus.' [SL-OM/SCM].

Their interpretation of the gardening tool metaphor seemed to be contingent upon their predisposed (critical) view of supply chains as an 'instrument of domination' (Morgan, 1997). It seemed that metaphors did not enable scholars to see anew, but rather were re-interpreted according to scholars' existing perspectives. Together these insights prompted a return to the literature which offered some suggestions for making sense of them.

6.6. Making some sense of the unexpected.

Through re-engaging with the literature on metaphor and organization theory considering the challenges faced, it seemed the original intention to propose novel metaphors was a product of the influence of the *dominant* literature on metaphor and theorizing in organizational literature.

Some scholars have suggested that the dominant trend in literature on metaphor and organizational theorizing has been to focus on the issue of *what metaphor does* for scholarly thinking, with relatively less focus on the ontological concern for *how metaphor works* (Oswick and Grant, 1996; Oswick, Keenoy and Grant, 2002; Cornelissen, 2005; Schoeneborn, Blaschke and Kaufmann, 2013). Rooted in epistemological concerns, key debates on metaphor in organization theory have generally centred on whether metaphor should be afforded a positive or negative status (Grant, 2001), and what the particular epistemological function of metaphor in organization theory really is (Pinder and Bourgeois, 1982; Morgan, 1983; Tinker, 1986; Tsoukas, 1993; Inns, 2002). According to Oswick, Putnam and Keenoy (2004, p. 106), such literature has tended to '*presume rather than explicate* the complex relationship among language, thought and meaning [emphasis added]'.

Reflecting again on how metaphor has been discussed in the *sustainability* context, it seems that that literature has similarly focused on the *function of metaphor*, as these discussions often focus on emphasising the potentially constraining role of dominant metaphors in achieving sustainability, and therefore the logic related need to find new ones (Norgaard, 1995; Romaine, 1996; Jermier and Forbes, 2011, 2016; Morgan, 2011). Norgaard (1995, p. 131) suggests, 'I do not think we have a metaphor we might survive by yet, but one might arise at any moment.'

This predominantly epistemological focus on metaphor in the wider literature perhaps provides some explanation for the rich tradition of *proposing new metaphors* for organizational phenomena. On the assumption of the liberating capabilities of metaphor, and the related argument of the value of multiple alternative frames for exploring a phenomenon (Morgan, 1997), a logical goal would be to maximise the number of frames i.e. propose novel metaphors. Norgaard (1995, p. 131) also said, 'it would help if we...experimented more aggressively with alternative visions.'

Rooted in the assumptions of this literature, this study's concern for identifying and proposing novel metaphors can similarly be seen as an epistemological one. And some of the critical questions that emerged through the process (why *these* metaphors?) can therefore be seen as ontological questions.

According to some authors, inattention to ontological issues of metaphor and the apparent prevalence of the epistemological goal of proposing new metaphors, has actually meant that a product of the rich interest in metaphor in organization theory has been the development of a 'laundry list' of novel metaphors which have had, on the whole, relatively little effect on organizational theory (Oswick, Putnam and Keenoy, 2004; Schoeneborn, Blaschke and Kaufmann, 2013). This has led Ketokivi, Mantere and Cornelissen (2017, p. 644) to observe that most novel metaphors 'never gain currency'. Given the urgency of the sustainability crisis, adding to a list of metaphors for sustainable supply chains which may never gain currency seems an unconvincing goal.

A further characteristic of these tendencies within the dominant literature is the prevailing assumption that metaphors are relatively stable and monolithic entities (Cornelissen, 2006c). Cornelissen (2006c, p. 690) refers to this as the 'popular but misguided view' that the generation of knowledge through metaphors involves the 'imposition of static images' on organizational phenomena.

This study's intention to propose novel metaphors for sustainable supply chains can similarly be said to have been informed by this 'popular but misguided view'. On further reflection, the fact that sustainable supply chain academics did not interpret the four novel metaphors (Figure 9) in the way they had been intended should be far from surprising. The 'interpretive viability' of novel metaphors (Cornelissen, 2006c, p. 691) has been central to perspectives which advocate the *value* of metaphors for theory development *as well as* to perspectives

which caution against the use of metaphors in organizational science (Pinder and Bourgeois, 1982; Ramsay, 2004). Yet, this study's assumption of the perceived value of proposing novel metaphors for the sustainable supply chain field similarly took for granted the idea that proposing novel metaphors would stimulate specific insights, and advance specific concerns along particular lines.

This view has been attributed to the dominance of one particular account of *how metaphor works*. This has been called the comparison account of metaphor (Cornelissen, 2004, 2005). According to Cornelissen (2005), the field's insufficient attention to the question of *how metaphor works* has meant that the field has defaulted to this *comparison model* of metaphor interpretation, which has thus become the dominant and unquestioned account.

The comparison account of metaphor is rooted in the original work of Aristotle (Cornelissen, 2005, 2006c, 2017) and suggests that 'metaphor interpretation...involves a comparison of objects or domains to determine what discrete properties or relations applying to one term can also apply to the other in the same or a similar sense' (Cornelissen, 2005). Evidence of this can be seen the seminal work of Morgan (1980), as he stated that a metaphor used in theorizing 'serves to generate an image for studying a [phenomenon]...[that] can provide the basis for detailed scientific research based upon to attempts to *discover the extent to which features of the metaphor are found in the subject of inquiry* [emphasis added]' (Morgan, 1980, p. 611).

As the dominant account, it has underpinned the few but influential accounts of *how* theorists should work with metaphor in theory development process (Cornelissen, 2005). Tsoukas' (1991) transformational model is similarly based on the comparison account, which has subsequently informed accounts of theorizing through metaphor in operations and supply chain (Garud and Kotha, 1994; Chen *et al.*, 2013). Based on the comparison account of

metaphor, the transformational model of metaphor presumes that leveraging the value of metaphor for theory development requires establishing isomorphism between the domains brought together in the metaphoric comparison. Thus theorizing through metaphorical transfer has been seen as a deliberate effort in ‘seeking similarities’ between two domains for the purposes of borrowing scientific knowledge from the metaphoric source to explain the target phenomenon (Hunt and Menon, 1995, p. 83).

In terms of the comparison account of metaphor, it may be relatively logical to propose novel metaphors. From this perspective metaphors are presumed to be relatively stable and monolithic entities (Cornelissen, 2006c) which reflect pre-existing features that can be mapped to the pre-existing features of the phenomenon of study (e.g., Chen *et al.*, 2013; McCabe, 2016). New metaphors can therefore be proposed and ‘handed over’ to the community.

However, Cornelissen (2005, 2006a) considers the comparison account of metaphor to be theoretically deficient and suggests that the predominance of this view has actually therefore *limited* the capabilities of theorists to leverage the truly creative and liberating capabilities of metaphor. An exchange in the *Academy of Management Review* has illustrated the two sides of the debate about how metaphor works (Cornelissen, 2006a; Oswick and Jones, 2006). The debate centres on whether metaphor works by comparing known features of the source and target domain (as argued by Oswick and Jones, 2006), or whether metaphor does more than that (Cornelissen, 2006a).

Based on the assumptions of the comparison account of metaphor, Oswick, Keenoy and Grant (2002) argue that metaphor is actually less helpful than other tropes (such as anomaly, paradox and irony) for generating genuine insight into organizational and management phenomena because metaphor is fundamentally about the comparison of similarities. They

suggest that metaphor ‘draws on our preunderstandings’ of similarities between the source and target domains. This is consistent with the comparison account of metaphor which suggests that understanding and comprehension of metaphor works through processes in which a person first finds a feature or set of features which is already present in the representation of the target concept, and then seeks out the features that are shared by the target and source concepts in the metaphor (Cornelissen, 2005). Therefore, rather than liberating thinking, it operates within a ‘cognitive comfort zone’ (Oswick, Keenoy and Grant, 2002, p. 298), serving a merely explicatory effect by making ‘the familiar more familiar’ (Oswick, Putnam and Keenoy, 2004, p. 117). They state that metaphor ‘undoubtedly...has the potential to reorient personal understanding, but does it generate *new* ways of thinking [emphasis in original]?’ (Oswick, Keenoy and Grant, 2002, p. 298).

By contrast, a body of work by Cornelissen and his co-authors has advocated for metaphor in liberating thinking for the benefit of organizational theory development based on an alternative theoretical account of *how metaphor works* (Cornelissen, 2004, 2005, 2006b, 2006c; Cornelissen and Kafouros, 2008a). Building upon wider evidence from cognitive science (e.g., Tourangeau and Rips, 1991), Cornelissen (2004, 2005, 2006c, 2006a) endorses a more dynamic and interpretive account of metaphor known as the domains-interaction model of metaphor. The domains-interaction model has been seen to provide an alternative (and superior) theoretical account of metaphor that, it has been suggested, can *better* explain the significant advancements that have been made in organizational theory through the use of metaphor (Heracleous, 2003; Cornelissen, 2005, 2006a).

The domains-interaction model of metaphor emphasizes that metaphor comprehension and interpretation involves a creative blend of meaning through *interaction* between the source and target concepts. This means that metaphor facilitates inferences that go beyond any pre-existing meaning associated with either the source or target domains. It suggests that in

metaphor comprehension, ‘there is new meaning [created]...that is not simply a composition of meanings that can be found in either the target or source concepts’ (Cornelissen, 2005, p. 758). This builds on experimental evidence from cognitive science which has sought to understand how metaphor interpretation occurs. For example, Tourangeau and Rips (1991) showed that many of the elements that feature in the interpretation and meaning of a metaphor are not actually well-established elements of the pre-existing conceptualizations of either the source or target concepts.

The domains-interaction model has therefore been used to make sense of the observation that different facets of scholarly communities have interpreted the same metaphor very differently. From the domainsinteraction model of metaphor, it can be understood that variations in the meanings associated with either the source and/or target concepts leads to variations in the emergent blend. Rather than assuming that a metaphor brings with it a pre-existing meaning that can reliably and predictably shift a perspective on a phenomenon, Cornelissen (2006) emphasized that *context matters* in interpretation. Cornelissen (2006b) emphasized that context means that the nature of metaphorical comprehension, even between scholars working within the same community, may vary among individuals. He demonstrated that the same metaphor could ‘spiral out’ differently across alternative scholarly communities within organization theory as it is blended with different communities’ dominant metaphoric constructions of organizations.

Specifically, he uses the case of the ‘organizational identity’ metaphor to illustrate how metaphor interpretation varies and has variously influenced theory development based on varying pre-existing interpretations of the source and target concepts of ‘organization’ and ‘identity’. This has had varying effects for organizational theory development across different research communities who have ostensibly adopted the same organizational identity metaphor. This re-emphasizes the suggestion that the meaning of a metaphor is constructed

based on the (varying) pre-existing assumptions of the researcher and their pre-existing understanding/interpretation of the target and source concepts.

This section has demonstrated how the study's original intention to propose novel metaphors can be evaluated as logical but misguided – logical because it reflects a key tradition in the dominant literature but misguided because it is rooted in a limited and potentially limiting theoretical account of *how metaphor works*. The next section builds on these insights by reflecting on their meaning for the progress of the study and the achievement of the study's third objective.

6.7. Where to go from here? Looking backwards and looking forwards.

The encounters, reflections and literature discussed in sections 6.4, 6.5 and 6.6. have suggested that that the study's objective to *harness the liberating potential of metaphor for sustainable supply chain theory development* needs to be re-interpreted and operationalized in a different way.

Countering some of the assumptions of the comparison account of metaphor on which much literature is built, the assumptions of the domains-interaction model of metaphor have underpinned a number of studies which have instead sought to harness the creative potential of metaphor for organizational theorists in a different way. Their focus has been on attempting to understand and codify the specific functioning of metaphors and their impact in the context of organizational theory development in order to provide guidance rules for scholars to work with metaphors in the most impactful way (Cornelissen, 2004; Cornelissen and Kafouros, 2008b).

This literature therefore implies that instead of *proposing new metaphors*, the creative potential of metaphor can be harnessed by and for the sustainable supply chain community by better *understanding the processes of working with metaphor in theory development*. In order

to harness the liberating potential of metaphor for the benefit of sustainable supply chain theory development, what this study needs to do is not propose novel metaphors, but rather understand and articulate what sustainable supply chain scholars need to *do* to leverage the liberating capability of metaphor most effectively.

The work of Chen *et al.* (2013) in the supply chain field provides one effort to answer this question. Chen *et al.* (2013) makes a major contribution to the supply chain field by explicitly articulating a process for working with metaphor for the benefit operations and supply chain management theorizing. It is a process which can transform a casually invoked, literary metaphor (e.g., marital divorce) into a theory constitutive metaphor. Chen *et al.* (2013, p.580) cite Morgan (1980, p. 611) in defining a theory constitutive metaphor as a metaphor which ‘serves to generate an image for studying a [phenomenon]...[that] can provide the basis for detailed scientific research based upon attempts to discover the extent to which features of the metaphor are found in the subject of inquiry’.

However, considering the reflections and literature discussed in this chapter, their work can be further problematized in terms of the theoretical model of metaphor on which it is based—namely, the comparison account of metaphor. In line with the assumptions of the comparison account of metaphor, Chen *et al.*’s (2013) metaphoric transfer process is a process which is ‘deliberate in transferring and translating information between the domain of the source phenomenon...the domain of the phenomenon of interest’ (Chen *et al.*, 2013, p. 580). This means systematically mapping equivalences between the source domain and target domain at three levels: ontology, analogy, and identity (Tsoukas, 1991). The level of ontology refers to mapping similarities in terms of the constituent elements within the two domains. The level of analogy refers to the mapping of correspondences amongst the constituent elements within each of the two domains. The level of identity refers to the creation of general principles that aptly explain both the source and target concepts.

Based on establishing these equivalences, the authors suggest that their metaphoric transfer process ‘can be an invaluable theorizing mechanism for generating new insights into many supply chain management phenomena’ (Chen *et al.*, 2013, p. 585). But, rooted in the comparison account of metaphor, there is little space in this perspective for the assumption that supply chain concepts and phenomena are *constructed through* metaphoric representation, as suggested by the domains-interaction model. In line with the assumptions of the comparison model, Chen *et al.*’s (2013) metaphoric transfer process assumes that the features of the metaphor and the phenomenon of interest exist independently and ‘outside’ of the metaphoric comparison. For this reason, the authors were therefore able to quantitatively identify 247 relevant points of comparison between marital divorce and buyer-supplier relationship dissolution, based on a comparison between what is already known about buyer-supplier relationships and what is known about divorce. This is further evidenced by Chen *et al.*’s (2013, p. 583) instruction that propositions derived through metaphorical comparison should apply equally *aptly* to both the source and target concepts.

There is a risk therefore that working with metaphor solely on the basis of the process of metaphoric transfer process provided by Chen *et al.* (2013) would confine sustainable supply chain scholars to a ‘cognitive comfort zone’ (Oswick, Keenoy and Grant, 2002, p. 298), which leads to plausible and potentially ‘true’, but not *interesting*, conjectures. Indeed, based on their illustration of the metaphoric transfer process to transform marital divorce from a literary to a theory constitutive metaphor for the purposes of theorizing strategic buyer-supplier relationship dissolution, Chen *et al.* (2103) developed a set of robust, but arguably not *interesting*, propositions about strategic buyer-supplier dissolution.

From the perspective of sustainable supply chain theory development, this may be limiting. Considering calls for radical, novel and more creative approaches to theorizing sustainable supply chains, which are *interesting* in the sense that they deny rather than affirm the

assumptions of the field (Davis, 1971; Alvesson and Sandberg, 2011) reliance on the assumptions of the comparison model of metaphor alone within supply chain literature may prevent the field from harnessing the creative potential of metaphor more fully. Accepting the assumptions of the domains-interaction model means accepting that working with metaphor is a means for creatively stimulating novel and emergent insight that goes beyond any perceived pre-existing similarities. Based on the domains-interaction model, metaphors can be more or less *useful* in terms of the quality of the conjectures that emerge from imagination through metaphor, but they can never be true (Von Ghyczy, 2003; Cornelissen, Kafouros and Lock, 2005). This prompts the question of how to know, and therefore identify and select, which metaphors may be most useful for the benefit of sustainable supply chain theory development.

These insights serve to provide further critical reflection on the Approaches to Metaphor framework (Figure 4) that was originally developed in chapter 4. Considering the discussions in this chapter, the Approaches to Metaphor framework foregrounds an epistemological view on metaphor in its depiction of the scope of metaphor. As has been discussed in chapter 4, the Approaches to Metaphor framework articulates a research agenda for *what* supply chain scholars might do as part of their work with metaphor based on *what* metaphor can do (i.e., liberate or constrain). What it does not address, however, is *how* scholars should approach these activities for maximum benefit. Most particularly, how should scholars identify and select the metaphors that will be the most *revealing* (in line with the Revealing quadrant of the Approaches to Metaphor framework) or the most *confrontational* or *interesting* (in line with the Counterproposal quadrant)? How should a scholar identify and select metaphors that can be most beneficial, whether their approach is gap-filling, or problematization (Alvesson and Sandberg, 2011)?

These emergent questions signal how the study came to re-interpret its approach to addressing the study's third objective - *to harness the creative potential of metaphor for sustainable supply chain theory development*. This objective was originally interpreted as meaning that there was a need to *propose new metaphors* for the sustainable supply chain field. But, as has been discussed, it seems that this interpretation was predominantly influenced by the epistemological flavour of the dominant literature on metaphor and the implicit assumptions associated with the comparison model of metaphor. The critical questions, reflections, and new theoretical insight that have been presented in this chapter therefore trigger a new interpretation of how the study's third objective should be achieved. This involves not proposing new metaphors, but better understanding and depicting how scholars can work consciously and effectively with metaphor for the benefit of sustainable supply chain theory development. This work is depicted in chapter 7.

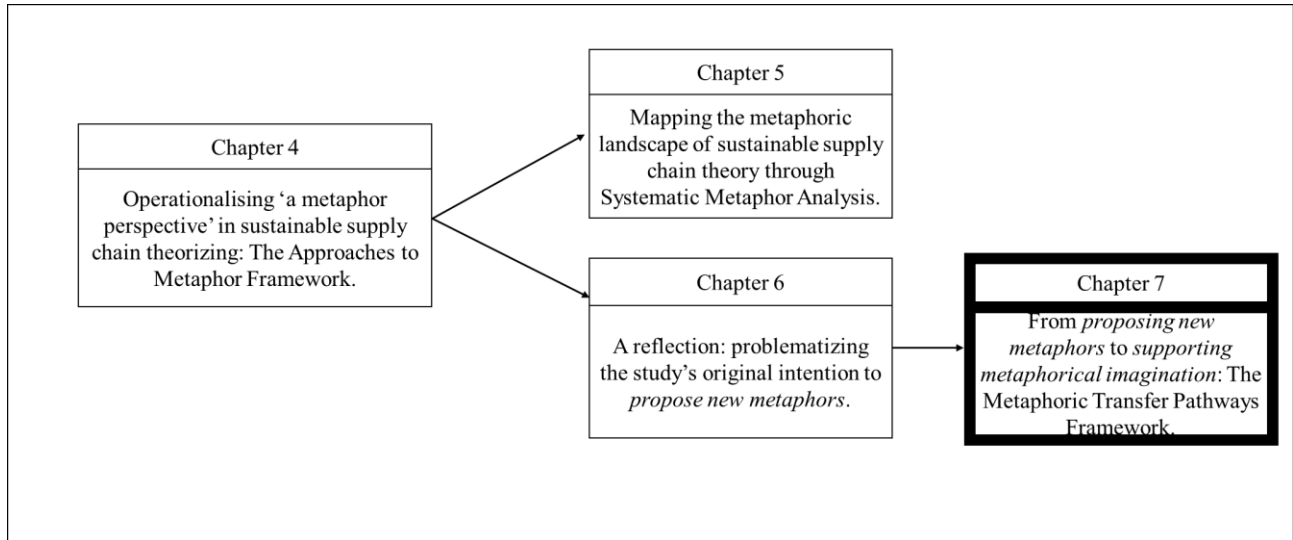
Chapter 7 – From proposing new metaphors to supporting metaphorical imagination: The Metaphoric Transfer Pathways framework.

7.1. Introduction.

Metaphors have a potentially powerful capability to liberate thinking and stimulate new insights. Such value has long been recognized for the purposes of theory development (Shoemaker, Tankard Jr. and Lasorsa, 2004; Swedberg, 2016, 2020). In this tradition, a key goal for researchers has been *to propose novel metaphors*. However, chapter 6 has demonstrated that such a goal may be seen as limited because it is associated with the assumption that metaphors are relatively stable, monolithic entities (Cornelissen, 2006c) and a limited view of *how metaphor works* (Cornelissen, 2005). Chapter 6 therefore suggested that there is a need to better understand the processes by which a scholar can best leverage and maximise the liberating potential of metaphor for the benefit of sustainable supply chain theory development. However, there seem to be limitations in the guidance available to sustainable supply chain scholars in this regard. The guidance from within the supply chain literature (i.e. Garud and Kotha, 1994; Chen *et al.*, 2013) is limited in its recognition of wider theoretical evidence about how metaphor works. Meanwhile, the guidance from within the organizational theory literature is limited in its accessibility to a scholar who is new to working with metaphor.

These limitations underpin the present chapter's concerns to harness the liberating potential of metaphor by *exploring how scholars can work consciously and effectively with metaphor for the benefit of sustainable supply chain theory development*. Figure 10 depicts the position of the ensuing discussion in relation to the thesis' previous chapters.

Figure 10 Relationship between the four chapters that depict the study’s key conceptual work and knowledge claims - Chapter 7.



This chapter draws on the theoretical literature to address the perceived limitations and develop a novel framework – the Metaphoric Transfer Pathways framework – which provides a holistic process-based account of working consciously and effectively with metaphors for the benefit of sustainable supply chain theory development. In particular, the framework makes two key additions to the guidance from the supply chain literature. First it extends existing guidance to address the question of how scholars identify possible metaphors to work with in the first place. Second, it augments existing guidance by articulating a set of evaluation criteria by which scholars can select between possible metaphors, to work with those metaphors which might be most productive for their specific theorizing goals. In so doing, it foregrounds the issue of the productivity of a metaphor, which has largely been left out of discussions of metaphor within supply chain literature. By presenting a process-based account of metaphor-based theory development, it re-orders existing guidance in the organizational literature to articulate a process which will be particularly accessible to scholars who are new to working with metaphors for the benefit of theory development.

The remainder of the chapter is organized as follows. Section 7.2. explores the limitations and opportunities posed by existing literature for aiding scholars in their efforts to work with metaphors consciously and effectively for the benefit of sustainable supply chain theory development. Section 7.3 introduces two novel approaches to identifying metaphors to work with. Section 7.4. articulates a set of evaluation criteria that further inform approaches to identifying and selecting metaphors which may be most productive in facilitating novel insight. Section 7.5 subsequently integrates these ideas in the development of the novel Metaphoric Transfer Pathways framework. Section 7.6. reflects on the relevance and potential challenges of the newly proposed framework for sustainable supply chain community in terms of the insights derived from engagements with the academic community. Finally, section 7.7. draws conclusions and describes the progression to chapter 8.

7.2. Insights from existing literature on identifying and selecting metaphors for theorizing activity – limitations and opportunities.

In the slipstream of the influential work which has elevated interest in the role and status of metaphor within organization theory (Morgan, 1980; Bacharach, 1989; Weick, 1995), several studies have sought to understand and explicate the structure of how theorists work with metaphor for the benefit of theory development (Tsoukas, 1991; Hunt and Menon, 1995; Cornelissen, 2002, 2006c; Chen *et al.*, 2013). Hunt and Menon (1995) provide a useful articulation of the *dimensions* of metaphoric transfer – that is *what* gets borrowed between a source and target domain in theorizing. They identify four key dimensions – ontology, theories, concepts, and values. These are broadly consistent with the assumptions depicted in one of the most influential process-based accounts of metaphor - Tsoukas' (1991) transformational model. Prior to Cornelissen's (2005, 2006b; 2008a) work with the domains-interaction model of metaphor, Tsoukas (1991) was 'the only theorist to take

up the challenge of suggesting a full-blown model of how metaphor might operate' (Cornelissen, 2005, p. 754).

The transformational model has been useful in depicting a process by which a metaphor can be used to 'yield knowledge' which can be rationally assessed and accepted (Cornelissen, 2002, p. 262). It has been referred to as a transformational model because it depicts a systematic process by which a metaphor is said to be transformed into a scientific model. This process involves an initial insight that a source concept (metaphoric image) may provide insight into the phenomenon under study, followed by the development of a conceptual model that maps the analogies between the source and target phenomena. This may result in isomorphism between the source and target domain, so that knowledge about the source domain is said to be applicable to building theory about the target domain. This has subsequently inspired the metaphoric transfer process offered by Chen *et al.* (2013). As discussed in chapter 6 these models proceed from the assumption of the comparison account of metaphor.

Beyond their roots in the comparison account of metaphor, however, one of the key limitations of these process models relates to their lack of explicit consideration of the issue of the *productivity* of a metaphor. They deal only implicitly with the observation that not all metaphors may be assessed as having the same ability to generate theoretical insights. Tsoukas (1991, p. 576) alludes to this when he explains that there is no 'a priori guarantee' that the metaphor will 'survive' the transformation process. According to his transformational model, survival means that a systematic comparison has found that the source and target concepts share an identity, so that knowledge of the source will be useful for understanding the target. Relatedly, he also acknowledges that his method for transforming a specific metaphor into a scientific model 'cannot offer ex ante criteria' in order to

choose between and select a metaphor to undergo the transformation process in the first place (Tsoukas, 1991, p. 576).

Nonetheless, this suggests that there *are* key criteria or conditions or characteristics that influence the value of a metaphor for theory development. This has been referred to as the heuristic value of a metaphor (Hunt and Menon, 1995; Cornelissen, 2002, 2006c) and although it has been dealt with to varying degrees of depth, it represents a longstanding principle within metaphor theory. For example, Black (1993, p. 41) suggested that metaphors that survive critical examination and are therefore deemed to be *useful* are those that are held to ‘convey insight’ into the systems to which they refer and which generate insights about ‘how things are in reality’. In a more recent reflection, Morgan (2011, p. 468) suggests that the value of a metaphor can be assessed in terms of its ‘insight, value and action potentials’. He encourages theorists to ask themselves, ‘[d]oes the metaphor generate valuable insight that allow us to understand what’s happening in a more informed way?’

The suggestion that different metaphors may be more or less useful in generating valuable insight is clearly implied through the numerous typologies of metaphors that have been variously discussed throughout the thesis. For example, because ‘dead’ metaphors are metaphors which have become conventionalized, they stimulate little new thought. Because live metaphors feature semantic anomaly and incongruence which is surprising to scholars they stimulate cognitive processes which can lead to new perspectives (Cornelissen, 2005). Thus, live metaphors have generally been the focus of scholars interested in methods of theory development.

Still, other typologies also help to highlight that not all live or novel metaphors are necessarily equally useful to the sustainable supply chain scholar. For example, Black (1993) proposed the difference between ‘strong’ and ‘weak’ metaphors, where strong metaphors are characterized by ‘resonance’ and ‘emphasis’. Resonance means that the metaphor lends itself to further elaboration

and has numerous applications, while emphasis means that the metaphor is effective in expressing the inexpressible, so that the words used cannot be substituted (Grant, 2001, p. 10962). By contrast, weak metaphors are metaphors which have little meaningful influence, and may be compared to an ‘unfunny joke’ (Black, 1993, p. 93). An additional typology distinguishes between ‘surface’ and ‘root’ metaphors (Schon, 1979): root metaphors are metaphors which have the capacity to ‘broaden and deepen understanding’ of the phenomenon under investigation, while surface metaphors ‘just embellish communication’ (surface metaphors) (Morgan, 2011, p. 468). And more recently, Cornelissen and Durand (2014) characterized metaphors as *heuristic*, *causal* or *constitutive*, illustrating the different ways in which metaphors may inform theory development. *Heuristic* metaphors may provide ideas and assumptions from a source domain, *causal* metaphors may provide causal explanations and hypotheses, while *constitutive* metaphors may provide an integrated conceptual model which is coherent in its assumptions, logic, and hypotheses.

The implication is that metaphors which may be useful to a community because of their semantic anomaly as ‘live’ metaphors should nonetheless be recognized and evaluated for the *extent* and *nature* of the insights and value they may bring to the development of knowledge in the field. This may be referred to as the productivity of a metaphor. Cornelissen and Kafouros (2008a) refer to the productivity of a metaphor in theorizing as its impact on theory. They articulate two types of impact – generative and explicatory. A metaphor which has explicatory impact helps the theorist to organize and clarify theoretical understanding by facilitating ‘conceptual clarification’. By contrast, a metaphor which has generative impact leads the scholar to novel insights and inferences which lead to ‘conceptual advances’ (Cornelissen and Kafouros, 2008a, p. 367). Their work was inspired by the domains-interaction model of metaphor.

It is therefore axiomatic that alternative theoretical accounts of how metaphors work to generate insight have also informed alternative views of productivity. The comparison account of metaphor, and the metaphoric transfer process as espoused by Tsoukas (1991) implies that a metaphor should be evaluated as productive in terms of the extent to which it is able to produce conjectures which are deemed to ‘aptly apply’ to both the source and target phenomena (Chen *et al.*, 2013, p. 583). By contrast, Cornelissen (2005) explored the productivity of a metaphor based on the assumptions of the domains-interaction model. He therefore highlighted a set of eight ‘optimality principles’ derived from and inspired by work by cognitive scientists (Fauconnier and Turner, 1998, 2002) which represent ‘a set of constraints under which metaphorical blends are most effective’ (Cornelissen, 2005, p. 1588). These included, for example, that relations in the metaphorical blend should match the relations of their counterparts in other semantic domains (the topology principle), that the target and source concepts need to come from semantically distant domains (the distance principle) and that the source concept is sufficiently concrete (rather than abstract) to be easily understood and manipulated (Cornelissen, 2006b). These principles have more recently been applied by Schoeneborn, Blaschke and Kaufmann (2013) to justify their suggestion of the metaphor of organizational insomnia for theorizing deficiencies in organizational learning.

Cornelissen (2004, p. 706) emphasized that the use of metaphors for theory development ‘is not trivial lest unconditional’ and therefore their use ‘needs to be an informed, disciplined, and guided process instead of being based on an ‘anything goes’ maxim’. Considering the predominantly epistemological character of discussions on metaphor within organization theory, as discussed in chapter 6, calls have been heard for more methodological advancements in the use of metaphors for theory development (Cornelissen, Kafouros and Lock, 2005; Schoeneborn, Blaschke and Kaufmann, 2013). This section has demonstrated that previous studies have contributed

significantly to our understanding of the workings of metaphor, which enhances understanding of how scholars can work consciously and effectively with metaphors in the context of theory development. In summary, this has included efforts to clarify *what* is transferred between a source and target domain (Hunt and Menon, 1995), *how* a metaphor may be ‘processed’ to yield useful and appropriate knowledge about the source domain that will enhance understanding of the target domain (Tsoukas, 1991; Chen *et al.*, 2013), the different *types* of impacts that different metaphors can have on theory development activity (Cornelissen and Kafouros, 2008a), and what criteria characterize a metaphor which leads to the most impact (Cornelissen, 2006b).

However, overall, this insight has had limited impact on discussion of metaphor within the supply chain field. As has been mentioned, the major work on the topic has focused on how a metaphor may be processed to yield robust theoretical conjectures, in line with the comparison account of metaphor (Chen *et al.*, 2013). Moreover, considering the wider knowledge discussed in this section, discussion of metaphor in the supply chain field may also be seen to be limited in two additional key respects.

First, it is limited in its consideration of the *productivity* of a metaphor. The organization theory literature on metaphor suggests that this is an important consideration in helping scholars to maximise the value of a metaphor for sustainable supply chain theory development. Secondly, it is limited in its depiction of the preliminary processes of identifying a potential metaphor to work with in the first place. The key methodological accounts of working with metaphor to generate theoretical propositions (Tsoukas, 1991) and illustrative examples of the application of this procedure (Garud and Kotha, 1994; Chen *et al.*, 2013; Tate *et al.*, 2019) begin after the point at which the metaphor has been selected, e.g., marital divorce (Chen *et al.*, 2013), brain (Garud and

Kotha, 1994), fungus networks (Tate *et al.*, 2019). There is little discussion or guidance about how such metaphors were or should be identified in the first place.

This may also be considered a relative limitation of guidance in organization theory literature, too. For example, Morgan (2011, p. 469) suggests that metaphors simply emerge as part of a theory building process: ‘it is not just a question of sitting down and coming up with new ideas. Generative metaphor often emerges quite naturally if one tries to really investigate and understand the nature of the issues that one is dealing with and wrestle with problems of concern’ (Morgan, 2011, p. 469). However, this is deemed problematic for authors who wish to work consciously and effectively with metaphor to dismantle, de-ossify and deconstruct existing thought (Chia, 1996; Morgan, 1996; Alvesson and Sandberg, 2011), and generate new perspectives (Schon, 1979; Weick, 1989) as part of their theory development activity. Even the influential process view of theorizing as disciplined imagination, as offered by Weick (1989) and further elucidated by Cornelissen (2006b), which has at its heart the assumption that scholars use thought trials to identify and select between alternative metaphorical representations of organizational phenomena, is arguably limited in its guidance of where scholars *should start*.

Against this backdrop, there is significant scope for recontextualizing and addressing the limitations of this methodological knowledge for the benefit of the sustainable supply chain scholar. The next sections therefore draw on the theoretical literature discussed in this section to address these collective limitations to develop new methodological guidance for the benefit of the sustainable supply chain scholar. Specifically, it synthesizes insights related to the *productivity* of metaphor and re-orders methodological guidance from a *process* perspective. This yields practical guidance that will support sustainable supply chain scholars’ efforts to work more consciously and effectively with metaphor in theory development.

The nature of this guidance is motivated by the principles of the metaphor perspective that underpins this study (as introduced in section 2.6.). It therefore positions metaphor not as an element of the broader theorizing process, but rather as a theory development strategy. Therefore, the guidance elucidated in the remainder of this chapter serves not to act as a substitute for the metaphoric transfer process provided by Chen *et al.* (2013), nor to proceed exclusively from the perspective of the domains-interaction model of metaphor, but rather to synthesise wider knowledge within a more holistic and accessible account of metaphor-based theory development. In so doing, it navigates rather than reconciles debates related to *how metaphor works*, to provide pragmatic guidance that will enhance the sustainable supply chain field's ability to benefit from the powerful potential of metaphor.

First, section 7.3. explicitly articulates two novel approaches for consciously seeking to identify metaphors that may serve metaphor-based theory development activities. These are 're-enlivening dead or dormant metaphors', and 'searching for live metaphors from distant domains'. Secondly, section 7.4. introduces evaluation criteria to further guide scholars' efforts in identifying and selecting those metaphors to enhance the productivity of those efforts. These provide the core elements of the new Metaphoric Transfer Pathways framework which is subsequently introduced in section 7.5.

7.3. Novel approaches to identifying metaphors to work with for sustainable supply chain theory development.

Putting metaphor at the heart of theory development activities requires approaches to identifying metaphors to work with in the first place. Using the typology of 'live' versus 'dormant' or 'dead' metaphors, this section proposes two explicit approaches by which a scholar can identify a potential metaphor.

7.3.1. Re-enlivening dead or dormant metaphors.

The first approach refers to the re-enlivenment of dead or dormant metaphors that are associated with a phenomenon. This is inspired by Schoeneborn, Blaschke and Kaufmann's (2013, pp. 437–438) perspective on the death of a metaphor as a process in which a metaphor becomes *decontextualized* and *disconnected* from its source domain. The authors therefore describe a live metaphor as one that 'remains sensitive' to the source domain from which it originated (Schoeneborn, Blaschke and Kaufmann, 2013). Stated in this way, it becomes possible to suggest that a metaphor may also be *kept alive* – that is, ensuring the metaphor remains familiar and recognizable *as a metaphor* to an individual scholar or among the scholarly community. Along the same line of reasoning, it may be suggested that a dead or dormant metaphor may also be *brought back to life*, for an individual scholar or a scholarly community, through a conscious effort of re-connecting and re-associating the taken for granted metaphoric term with its original source domain (Schoeneborn, Blaschke and Kaufmann, 2013).

Therefore, the first approach to consciously identifying metaphors to work with in sustainable supply chain theory development concerns recognizing existing metaphors in sustainable supply chain theory *as metaphors*, to be able to leverage their metaphoric capabilities more effectively. One key result of this may be that it enables the scholar to explore the metaphoric image and its source domain for underutilized or newly developed knowledge. Such knowledge may usefully stimulate new, or update existing, conjectures (Stephens *et al.*, 2021). This may be particularly relevant to sustainable supply chain scholars given that there is not an established tradition of consciously or explicitly proposing or working with novel metaphors in the field. The sustainable supply chain field is nonetheless replete with metaphors that have served to conceptualize the field (e.g., *relationships*) which may not be easily recognized as metaphors (Ramsay, 2004).

For example, the sociological metaphor of inter-personal relationships has been central to the conceptualization of supply chain linkages, although may not now be easily recognized as a metaphor. Since the 1990s, the metaphor has been the basis of programmatic research in supply chain management. It has framed the transfer of concepts and theories from the knowledge domains of sociology, interpersonal relationships, and marital studies to the study of supply chain linkages. It may therefore be considered a dormant metaphor which may be usefully re-enlivened to inform theorizing on supply chain linkages in terms of additional concepts and theories from the source domain of inter-personal relationships. For example, work by Leonidou and co-authors (Leonidou *et al.*, 2017, 2018a, 2018b, 2019) has re-enlivened the inter-personal relationships metaphor to theorize supply chain *infidelity* in terms of knowledge about infidelity from the source domain of marital relationships. This led them to infer and demonstrate, for example, the role of *forgiveness* in resolving inter-organizational conflicts.

7.3.2. Searching for novel metaphors from distant domains.

Relying exclusively on the metaphors that may have already made their way into and become normalized within sustainable supply chain theory may however be restrictive. An additional approach relates to a conscious process of seeking novel metaphors from other (more distant) domains of knowledge and experience that have not previously been, or are not traditionally, associated with sustainable supply chain theory.

The supply chain field has traditionally drawn from knowledge domains that are perceived to be close to and dealing with issues that are considered like those in the supply chain field. However, a metaphor-based perspective on theory development highlights the relevance of distance between the domains of experience which are brought together in a metaphor. In line with some perspectives on the value of metaphor for theory development (Tsoukas, 1993; Chen *et al.*, 2013), the identification

of metaphors from previously untapped and more ‘semantically distant’ domains of knowledge may support the infusion of new theoretical material that can stimulate theory development. In this regard, Chen *et al.*’s (2013, p. 581) metaphoric transfer process will provide a useful resource for establishing the analogical connection, or ‘identity’ (Tsoukas, 1991), which will assure the ‘proper borrowing’ of such new theoretical material.

However, distant domains may also be seen as a source of metaphors that can support problematization approaches to theory development. Alvesson and Sandberg (2011, p. 257) suggest that the problematization approach to theory development involves identifying the root metaphor underlying a field or school of thought and then working with alternative possible ‘confrontational metaphors’. They suggest that this can inspire a scholar to articulate their own assumptions, which may be intimately connected to a deeply established root metaphor.

For example, the metaphor of ‘dancing’ has been proposed as an alternative to sociological metaphors of inter-personal/marital relationships for supply chain linkages (Wilkinson and Young, 1993; Wilkinson *et al.*, 1998). This hails from a source domain of performative arts that can be considered very distant from the operational and business world of inter-organizational interactions, and different from the root metaphor of supply chain linkages as inter-personal relationships. It may therefore serve as a confrontational metaphor which challenges a supply chain scholar to problematize their own assumptions about supply chain linkages which may have been highly influenced by the *relationships* metaphor.

The dancing metaphor helps to expose some of the basic assumptions that may have been smuggled into strategic relationships literature, such as the assumption that all supply chain linkages do (and should) progress toward a mature, stable state of long-term commitment that supposedly characterizes *happy marriages* (Wilkinson and Young, 1993). Ramsay and Caldwell (2004, p. 81)

suggested that metaphoric concepts of cooperation and partnerships in the context of buyer-supplier interactions are imbued with inherently positive connotations, which lend them an ‘unwarranted, intrinsic approval’.

More recently, the dancing metaphor has also been proposed by Wieland (2021) to shine a spotlight on, and critique, the dominant static and reductionist assumptions within wider supply chain, and sustainable supply chain theory. The dancing metaphor therefore provides a counter-stance to the relationships metaphor, acting perhaps as a *heuristic* metaphor (Cornelissen and Durand, 2014) whose role is to facilitate the process of dismantling prevailing assumptions. The result may be that this novel metaphor can either provide a new assumption ground, or facilitate the development of a new assumption ground, for future theorization.

Efforts to ‘re-enliven dead/dormant metaphors’ and ‘search for novel metaphors from distant domains’ begin to provide some guidance for how scholars might consciously identify metaphors to work with in their theory development activities. However, these approaches will be even better informed by greater recognition of the specific features of a metaphor that may make it most productive for a scholar’s specific theorizing purposes (e.g., gap-filling, or problematization). The next section articulates a set of criteria by which scholars may further direct and constrain their metaphoric search (among existing theory, or of novel domains), and subsequently select metaphors to work with, in terms of features which may help to assure the productivity of a metaphor for their theory development purposes.

7.4. Evaluating the productivity of a metaphor – a set of criteria.

This section draws on the theoretical literature which was introduced in section 7.2. to articulate three criteria by which a sustainable supply chain scholar may evaluate the productivity of a

potential metaphor. They may therefore also support the approaches described in section 7.3. These criteria represent a synthesis of evidence from the literature regarding the criteria that help to explain the productivity of a metaphor for theorizing efforts. They represent an effort to navigate, rather than reconcile, the alternative theoretical accounts for how metaphor works (comparison account versus domains-interaction). In so doing, they represent a parsimonious, pragmatic, and accessible set of criteria for guiding scholars' efforts to identify and select metaphors as part of their theorizing activities.

7.4.1. Criterion 1: Aptness – is the metaphor *believable*?

The first criterion is aptness. This criterion is concerned with the assessment that the source concept is sufficiently realistic, or believable for the study of the supply chain topic under investigation. Aptness may also be associated with the concept of 'within-domains similarity' which means the extent to which the source concept captures important features of the target concept (Cornelissen, Kafouros and Lock, 2005). Cornelissen, Kafouros and Lock (2005) have shown that the higher the within-domains similarity –when the metaphor is seen to capture many features of the target – the better the metaphor is able to serve theorists in both clarifying understanding of the target phenomenon (the 'explicatory' impact of metaphor), as well as providing the grounds for further exploration of previously unexplored or under-theorized features of the target phenomenon (the 'generative' impact of metaphor). Chen *et al.*'s (2013) assessment established that the metaphor of divorce captured numerous salient features of strategic buyer supplier dissolution which thus enabled it to inform the authors' further theorization of buyer-supplier dissolution.

From a domains-interaction model perspective, the concept of aptness emphasizes similarity at a higher level of abstraction. Cornelissen (2004) use the example of organizations as theatre to highlight this point. While the metaphor may not be considered apt in terms of pre-existing

similarity between organizations and theatre, its conjunction makes sense at the higher level of comparison between the semantic domains of the social world of organization and the performative arts of theatre, which are both characterized by performativity. This has been referred to as ‘aspectual similarity’ (Lakoff, 1993; Cornelissen, 2004) and, in line with the assumptions of the domains-interaction model of metaphoric interpretation, does not rely on any pre-existing similarity between the source and target concepts. Aptness therefore refers to an assessment of whether the metaphor ‘fits’ and is ‘meaningful’ (Cornelissen, 2004, p. 718).

7.4.2. Criterion 2: Richness – is the source domain theoretically rich?

The second criterion is richness and is closely related to the first criterion of aptness. Richness concerns the question of whether the field of knowledge related to the source concept is well-established and theoretically rich as a source of terminology, concepts and theories that may be usefully transferred to the study of sustainable supply chain phenomena (Hunt and Menon, 1995).

The concern for richness endorses an assumption which is implicit in the purpose of metaphoric transfer in operations and supply chain management (Chen *et al.*, 2013) and aligns with Tsoukas’ (1993, p. 334) assessment that to disregard metaphorical thinking in theory development is ‘to ignore injudiciously the knowledge which has been painstakingly accumulated across a variety of scientific fields, which could give us some clues regarding our own theoretical questions’.

The richness criterion therefore serves to partly explain the distinction between ‘surface’ and ‘root’ metaphors in terms of their impact on thinking. On the basis of their connection with domains of experience and knowledge which are rich in ‘the number of substantive concepts’ and have a ‘body of models and theories’ (Hunt and Menon, 1995, pp. 85–86), root metaphors have the potential to underpin a substantial programme of research within the community. They are therefore a source of

new concepts, theories, and inferences which, on the assumption of aptness, may usefully inform theorizing about targeted supply chain phenomena. By contrast, surface or decorative metaphors which are not characterized by their connection with a rich body of knowledge (e.g., *supply chain*) are therefore not able to provide for conceptual breakthroughs and may simply serve to just ‘embellish communication’ (Morgan, 2011, p. 468).

7.4.3. Criterion 3: Interestingness – is the metaphor a source of surprising conjectures?

The third criterion is interestingness which is named for the phraseology used by Davis (1971) in emphasizing the need for the development of *interesting* theory. It captures the idea that metaphors are valuable for theory development in terms of not only affirming and extending knowledge of the target phenomenon in terms of the received wisdom, but also providing for surprising and counter-intuitive suggestions that deny rather than affirm certain assumptions (Davis, 1971).

Central to this criterion is the issue of ‘semantic anomaly’ which refers to the recognition and identification of *dissimilar attributes* between the source and target concepts (Cornelissen, 2002). This leads to a tension or surprise (Cornelissen and Kafouros, 2008a) and thus creativity (Hunt and Menon, 1995). Working through such tensions can reveal new insights and inferences that were inconceivable before. Through encountering the ways in which the source concept is ostensibly *not like* the supply chain phenomenon under study, the metaphor encourages the scholar to rearrange their view of the supply chain phenomenon, which may lead to new insights. The achievement of semantic anomaly has been linked with the extent of semantic distance between the domains from which the target and source concepts are drawn (Cornelissen and Kafouros, 2008a).

The three evaluation criteria are useful in guiding sustainable supply chain scholars’ identification and selection of metaphors to support their specific theorization activities. There are clear

connections between the novel approaches to identifying metaphors (described in section 7.3) and the criteria for selecting them presented in this section. Importantly, it is likely that different criteria may be more or less relevant for evaluating metaphors that are to be used for, or which will best serve, different approaches to theory development (namely, problematization or gap-filling).

For example, in the context of using metaphors to support problematization approaches to theory development, the criterion of ‘interestingness’ may be particularly important. This criterion guides the identification of metaphors which are particularly characterized by tension and surprise, so that it may serve to shock scholars into identifying and challenging their own assumptions. However, although it may serve as a useful device for stimulating scholars to problematize their own assumptions, a particularly ‘interesting’ metaphor which does not simultaneously satisfy the criteria of aptness and richness may not be deemed valuable for underpinning a wider and new programme of research among the wider community. Similarly, a metaphor which may be considered highly apt, and which hails from a domain of knowledge which is rich in a body of theoretical raw material, may serve to facilitate conceptual clarification and the extension of knowledge within the existing paradigm but, in the absence of greater semantic distance and anomaly, may not significantly impact the generation of truly interesting perspectives.

Along the same line of reasoning, the most productive metaphor which may best serve the sustainable supply chain community in theory development is one which satisfies all three criteria, and may thus have the potential to become a new root metaphor which can underpin a new programme of research which challenges scholars in thinking differently about sustainable supply chains (interestingness), while capturing salient features of sustainable supply chains (aptness) and giving scholars access to a well-established domain of theoretical raw material (richness).

The ideas presented in sections 7.3. and 7.4. extend existing guidance on working with metaphor within the supply chain literature. Importantly, it has foregrounded the issue of productivity within a synthesized set of criteria that can support scholars' efforts to identify and select metaphors within their theorizing activities. The next section consolidates these ideas within a process-based model which demonstrates how these resources may be operationalized within metaphor-based theory development.

7.5. The Metaphoric Transfer Pathways framework.

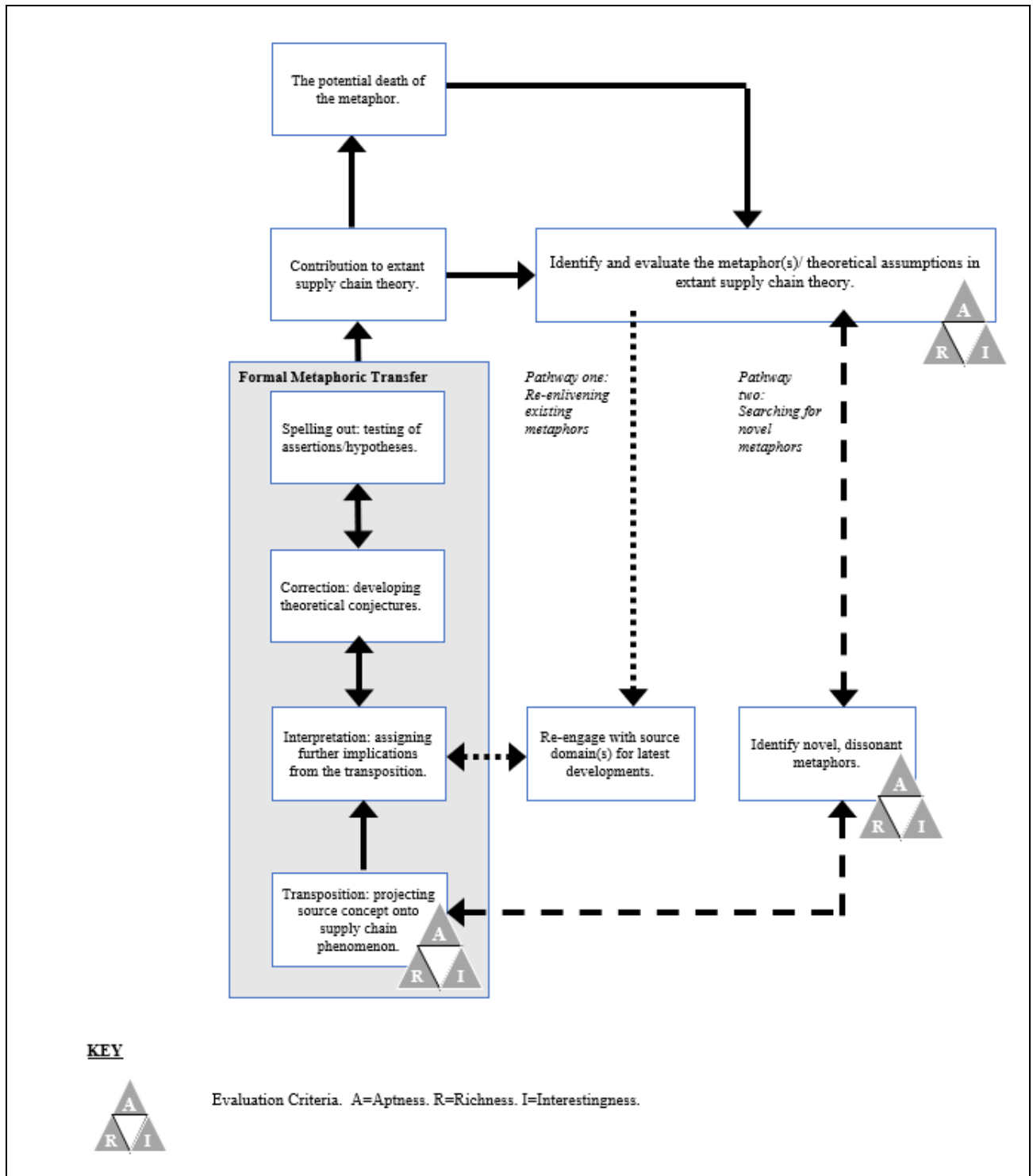
7.5.1. Introducing the novel Metaphoric Transfer Pathways framework.

This section introduces the Metaphoric Transfer Pathways framework (Figure 11). At the heart of the Metaphoric Transfer Pathways framework is a formal metaphoric transfer process depicted in wider literature which is articulated in four key stages – transposition, interpretation, correction and spelling out (Schon, 1965; Cornelissen, 2002; Montuschi, 2015). The first stage involves projecting a concept from a source domain on to the target situation under study (transposition). This asserts an initial equivalence between the source and target phenomena. The second stage involves interpretive work to produce novel conjectures which potentially describe and explain the target phenomena based on further implications from the source domain (interpretation). The third stage involves correcting conjectures through their empirical testing (correction), before the theoretical implications are stated and the value of the metaphor thus confirmed (spelling out) (Cornelissen, 2002).

Building on this process, the Metaphoric Transfer Pathways framework depicts how the approaches to metaphor described in section 7.3 (re-enlivening dead/dormant metaphors and searching for novel metaphors from distant domains) provide a 'ramp in' to these four stages. Additionally, the framework shows how the three evaluation criteria described in section 7.4. may be used to guide

scholars' decisions about which approach to take to identifying metaphors to work with through the formal metaphoric transfer process. It also shows that evaluation through the criteria of aptness (A), richness (R), and interestingness (I) (demonstrated by the triangle symbol in Figure 11) is an ongoing process for constraining and guiding scholars' work with metaphors. Section 7.5.2. provides a description of how a scholar may work with metaphor for theory development according to the Metaphoric Transfer Pathways framework.

Figure 11 The Metaphoric Transfer Pathways framework.



7.5.2. Working through the Metaphoric Transfer Pathways framework.

A starting point for scholars will be the identification and evaluation of metaphors already associated with the sustainable supply chain phenomenon under investigation. This can be done as scholars undertake their normal processes of defining the problem and investigating the literature. The evaluation of existing metaphors as apt, rich and/or interesting will then inform the subsequent pathway that is taken to identifying a metaphor to work with formally.

If the metaphor is evaluated as apt (because it captures salient features of the phenomenon of interest), rich (because it hails from a source domain that is rich in knowledge and theoretical raw material that may be useful) and potentially interesting (because it is deemed sufficiently distant and the comparison deemed surprising), then the most appropriate approach would be to proceed down Pathway 1, which involves the conscious re-engagement with knowledge of the source domain of the metaphor as a potential source of new theories or conceptual raw material that may be usefully exploited. If this is the pathway taken, then engagement with theoretical raw material from the source domain of knowledge, including new developments in the field, can support further interpretation of the metaphor, through the transposition of further concepts from the source domain to the target domain, and the development of further conjectures.

By contrast, if an existing metaphor is not deemed to be particularly apt, rich and/or interesting, a more appropriate approach may be to consciously search for novel metaphors from distant domains, while keeping in mind the evaluation criteria of aptness, richness, and interestingness as an ongoing source of guidance. As the two-headed arrow shows (Figure 11) searching for novel metaphors will be an interactive process of exploring distant source domains in comparison with existing metaphors and extant theory. This assumes that novel metaphors from distant domains should be deemed to

add value beyond what is provided by existing metaphors, rather than simply reinforce existing knowledge or provide new terminology for existing phenomena.

The iterative nature of pathway 2 may therefore serve two key purposes. The first regards the problematization of existing assumptions. Engaging with novel metaphors for the purposes of problematizing existing assumptions may help scholars to ask new questions and identify new theoretical constructs. These theoretical components may be very important for supporting the scholar's further theorization efforts, however the metaphor may ultimately be discarded and no trace of it may be identifiable in the final presentation of theory (Cornelissen and Durand, 2014). Alternatively, engaging with novel metaphors might lead to the identification of metaphors which are not only semantically distant and potentially *interesting*, but are also deemed to be *apt* and *rich*, meaning that it may subsequently be worked with through a formal process of metaphoric transfer.

The framework reminds scholars that over time a newly proposed or re-enlivened metaphor may successfully and usefully contribute to supply chain theory and potentially (through failing to prevent the disconnection of the metaphor from its source domain) come to be taken for granted as a true, real, or literal representation of supply chain reality (i.e., become dormant). The identification and evaluation of metaphors in extant supply chain theory is therefore an ongoing process. Relatedly, the framework assumes the dynamic and evolving nature of the knowledge that exists in the source and target domains, and thus the evolving nature of the potentially inferences that may be derived from an actively maintained connection between the two (Schoeneborn, Blaschke and Kaufmann, 2013). A pervasive and influential metaphor which was originally considered apt may thus lose its aptness through the evolution of the target domain. An example of this may be seen in the partial replacement of linear and mechanistic depictions of supply chain with network perspectives (Burgess, Singh and Koroglu, 2006). Similarly, the continued value of a richly

developing source domain may be under-appreciated and under-exploited if the metaphoric connection between the target and source is lost. The framework, with its proposed pathways and evaluation criteria, will provide useful guidance for motivating and constraining the process of metaphor-based theory development for the benefit of sustainable supply chain theory development.

7.6. Reflecting on the Metaphoric Transfer Pathways framework.

The Metaphoric Transfer Pathways framework has been developed because of efforts to explicate processes for working with metaphor which can be deemed rigorous and convincing. It extends existing guidance by synthesising two additional considerations which are important for sustainable supply chain scholars in working rigorously with metaphor in theory development activities. These are alternative approaches to convincingly identifying metaphors to work with in the first place, and criteria which may rigorously inform decisions based on the potential productivity of a metaphor for achieving the scholar's theory development goals. The framework was inspired by reflections on authentic encounters on proposing novel metaphors with and through sustainable supply chain academics (as outlined in chapter 6) and has been subsequently developed through working with the theoretical literature. This section reflects further on the framework in terms of the encounters with sustainable supply chain academics and activities described in chapter 6. It explores and discusses more fully the implications for scholars working with this framework in practice.

As metaphor represents a creative cognitive transfer process which 'escapes full-fledged formalization' (Boxenbaum and Rouleau, 2011, p. 276), the systematicity and order that is reflected in the Metaphor Transfer Pathways framework inevitably belies the messiness, iteration and interpretation that are unavoidably associated with working with metaphor in theory development. Although the two pathways in the framework (re-enlivening existing dead/dormant metaphors and searching for metaphors from more distant domains) are presented as distinct, they may be more

helpfully represented as complementary and interactive. Because no single metaphor could or should unilaterally capture or reflect the complexity of sustainable supply chains and their phenomena, metaphor-based theory development for the sustainable supply chain field through the Metaphoric Transfer Pathways framework will likely benefit from parallel efforts at both re-enlivening existing metaphors (such as those exposed through the systematic metaphor analysis) and searching for novel metaphors from more distant domains.

Moreover, it should be remembered that any evaluation of the productivity of a potential metaphor, particularly its aptness, will depend not only on the theorist's specific theory development goals (i.e., problematization versus gap-filling) but also on the theorist's unique knowledge and pre-existing assumptions about what is or is not theoretically salient in the sustainable supply chain phenomenon under investigation. This similarly has an impact on whether a metaphor is deemed to be *interesting*, that is, whether it denies or affirms the assumptions of its user(s) (Davis, 1971). This suggestion is rooted in theoretical perspectives which emphasize and explain variation in the interpretation and elaboration of the same metaphor between research communities (Cornelissen, 2006c), as well as observations encountered through this study's engagements with the academic community (section 6.5.)

Considering the insights generated through this study's engagement with the academic community, it seems the aptness criterion (*is the metaphor believable?*), resonates particularly strongly with the sustainable supply chain academic community. One of the academic participants interviewed framed the idea of the usefulness of the metaphor as the 'most realistic' metaphor. For them, the 'most realistic' metaphor was SUPPLY CHAIN AS A POLITICAL SYSTEM. Table 10 captures illustrative quotations of sustainable supply chain academics' accounts of the respective aptness of these metaphors. As table 10 shows, in general, the SUPPLY CHAIN AS A MACHINE metaphor was

considered less apt than other metaphors for thinking about sustainable supply chains, particularly in comparison with alternative metaphors such as SUPPLY CHAIN AS A NETWORK or SUPPLY CHAIN AS A POLITICAL SYSTEM. Prevailing conceptualizations of the supply chain, for example as a political system or network, will likely therefore inform the evaluation of aptness and interestingness of a novel metaphor derived from a novel source domain. For this reason, perhaps, one of the academics who was interviewed (AP-SM) was particularly enthusiastic about their newly proposed metaphor of SUPPLY CHAIN AS AN ORGAN OF A BODY. For them, this metaphor resonated with their perspective on the theoretical salience of information transfer and alert systems (table 10).

Table 10 Illustrative quotations of academics' assessment of the relative aptness of alternative metaphors.

Metaphor	Illustrative quotations
SUPPLY CHAIN AS A MACHINE.	<ul style="list-style-type: none"> <li>• <i>'It simplifies (too much) the issues, conveying the idea that there is a cause and a direct effect – 'I push on the brake and then it stops' [Workshop participant]</i> <li>• <i>'Serves to support the dehumanization and deresponsibilisation of the supply chain. ... they are given their own instrumentality. It's like when people talk about the system. There is no one to take ownership.'</i> [L-Man.] <li>• <i>'The more we talk about sustainable supply chain, we need to talk about regulation, we need to talk about NGOs and the role of these other actors, and this leads to a discussion on power and politics that goes beyond that more machine type of efficiency and focus of supply chain studies... [AP-SM].</i>
SUPPLY CHAIN AS A NETWORK.	<ul style="list-style-type: none"> <li>• <i>'...I use the metaphor of 'network' to get to the messiness of it, to get to the complexity and to show why things don't work. So, ...with the greatest intent, with the greatest policies, with the greatest contracts, the complexity of what we're trying to do stops us, because there are too many pulls on our priorities... It isn't always this ordered...even when we have tiering, in reality it doesn't work like that, we have mess and complexity and people....' [SL-OM/SCM].</i> <li>• <i>'We ...need to recognize that if we are telling the supplier to do something from a sustainability point of view, then we're not the only ones, there could be other customers giving them conflicting advice, and that is really important in understanding that network and how all the tiers connect to each other' [P-OM].</i>
SUPPLY CHAIN AS A POLITICAL SYSTEM.	<ul style="list-style-type: none"> <li>• <i>'You can think of supply chain as its own political system, and I think that that's a really powerful one [metaphor], given the power and reach of some of these supply chains, they are more powerful than some political systems. There needs to be a better acknowledgement of that. You know it's great to say that a</i>

company like Apple has pushed regulation forward, but they've only pushed it forward as much as is comfortable for them...' [L-Man.]

- *'the [metaphor] that I think is probably more realistic is probably around the political system...Everybody's in it and contributing to it, there will be rule makers...just as there are in any political system...there will be people who make the rules...we appoint MPs to make decisions for us, in a supply chain we appoint focal companies to make those decisions (and I don't agree with that necessarily, 'cause I don't know what their motive is for it)' [SL-OM/SCM].*
- *'The more we talk about sustainable supply chain, we need to talk about regulation, we need to talk about NGOs and the role of these other actors, and this leads to a discussion on power and politics that goes beyond that more machine type of efficiency and focused supply chain studies... [AP-SM].*

**SUPPLY CHAIN
AS AN ORGAN
OF A BODY.**

- *'An organ needs to be integrated to other organs and do help the body to sustain. Also, SUPPLY CHAIN as an ORGAN would need to warn the body (Planet) if something goes wrong/ in case of malfunction... if we are part of something bigger, a bigger organism, that could maybe help a supply chain to never detach from the broader picture and do something that is just good on its own, that's the one that comes to my mind after going through all this – I don't know if it's a cell, an organ, a lung, it's not there for its own good, but for the body to function properly... whenever an organ has a problem, it has to let the body know. So, an interesting question, is 'how can the supply chain alert when there is a problem?' Because these days it is the opposite: we hide until we are bounded by government or society, but we are destroying and hiding, it would be a positive supply chain, whenever there is a problem, a malfunction, it would have to alert the system that it needs help. Otherwise, the body will suffer. I think that's the most interesting one so far. It's really different to think like that, because any harm would have to ring a bell: ...we get some problem, we get an infection, its exactly to say 'look, there's a*

problem, go to the doctor' it's to let you know so it can do something before the damage is bigger'' [AP-SM]

It is important to note that the sustainable supply chain academics who took part in the one-to-one interviews also articulated aptness in terms of *normative* perspectives on sustainable supply chains. That is, they assessed a metaphor as useful on the basis that it represented what they saw to be theoretically salient elements of sustainable supply chains *as they should be*, even if that did not reflect theoretically salient aspects of sustainable supply chains *as they are now*. Table 11 captures illustrative quotations that reflect sustainable supply chain academics' assessments of alternative metaphors in terms of the extent to which they reflect what is deemed to represent the future of supply chain sustainability.

Wider literature on metaphor in the sustainability context has similarly emphasized the need for normative and prescriptive metaphors which are 'nature inclusive' (Larson, 2011; Jermier and Forbes, 2016; Jones, 2016) and which are compatible with progressive social change and theory development which has an emancipatory intent (Tinker, 1986). Specific consideration of the conditions which make a metaphor productive for specifically developing sustainability theory has yet to be conducted. Similarly, seminal literature on the productivity of metaphors for theory development in general has not explicitly taken into account the issue of *normative* theorizing, which sustainability may particularly require (Banerjee, 2012; Gladwin, 2012). Given that normative theories are evaluated differently from explanatory theory, it might be assumed that normative metaphors should be evaluated differently from explanatory metaphors.

For now, the existing evaluation criteria as it has been proposed within the Metaphoric Transfer Pathways framework would suggest that normative metaphors proposed by academics, such as SUPPLY CHAIN AS YOGA (proposed by SL-O/SCM) or SUPPLY CHAIN AS CRAFT FAIR (proposed by P-OM) may be *interesting* in the sense that they are semantically distant from the world of supply chain, and therefore may serve to problematize the limitations of existing metaphors such

as SUPPLY CHAIN AS A MACHINE (as SL-O/SCM did, see Table 10), but may not be considered sufficiently *apt* in that they fail to capture enough of the theoretically salient elements or features of the supply chain in order to underpin a broader programme of research. Moreover, the dynamic principle of the Metaphoric Transfer Pathways framework may at least facilitate scholars' ongoing reflexivity on the continued aptness of the assumptions perpetuated by existing supply chain metaphors in the evolving sustainability context (Morgan, 2011; Barter and Russell, 2013).

1 **Table 11 Illustrative quotations of academics' assessment of the 'normative aptness' of new metaphors.**

SUPPLY CHAIN AS YOGA	<ul style="list-style-type: none">• <i>'We need something that's slower. Machines are about speeding up efficiencies, and I think we need to do much more about how to get slow supply chains. ...taking time to notice, you only notice when you've got time to see. We don't appreciate what we've got. I think that slowing down is a nice thing to do. So perhaps there's something around pace. How do we take the foot off the gas a bit and appreciate what you've got? ...It needs to be yoga...we often sit and notice something and appreciate things after it's gone, after we've lost somebody.... after loss, when it's too late. ...I think people who have lost are the biggest advocates for that, so maybe there's something in that around finding who, where those voices are. Where things that have been lost, like those echoes of the past...what would you tell your future self? It's taking the time, it's walking, shared time with people, gardening...and even in business when you speak to people, that social capital, usually that's your most innovative'</i> [SL-OM/SCM]
SUPPLY CHAIN AS A CRAFT FAIR	<ul style="list-style-type: none">• <i>'Supply chain as proportionate to needs of consumer and producer'</i> [P-OM]• <i>'we're supplying things that people really need, we're not supplying things that people don't really need. Or that we are consuming things that people need to produce...if you think about children, if you go to a craft fair, you often find yourself buying something to encourage the child that's made it, so I don't see anything wrong with us buying things that perhaps we don't need but that someone's really enjoyed making and is making a life out of making it'</i> [P-OM]
SUPPLY CHAIN AS A BRAIN.	<ul style="list-style-type: none">• <i>'Supply chains are so goal-oriented, when you are pursuing a specific goal, maybe you can find out that you're not learning as much as you could, because you are so focused that you leave away anything else that's not directly helping that particular focus, right? So I think maybe that's the thing, the learning supply chain would have to be a bit more 'open' to novelty, interested, curious about</i>

what's going on, and interested in understanding the environment and not just fighting the environment, or protecting from the environment, but engaging with the environment to learn so that changes a bit the priorities the way you establish priorities for the firm and for the supply chain' [AP-SM]

- *'I saw it as a need to constantly learn and evolve...I like the idea of us trying to show it as a learning mechanism, where we try to change things...we do need to keep learning... Sometimes it is good to have targets, but it is also important to be willing to adapt those targets as new knowledge comes to light. Given bounded rationality, that affects all SCs, this has to be a key to the evolution of the SC.'* [P-OM]

**SUSTAINABLE SUPPLY
CHAIN AS A SHARED
FUTURE**

- *'That's what we're aiming at isn't it, that we have a supply chain that is very much in line with how Creation is meant to be, we're not working against Creation, we've still got flourishing trees and countryside and the people in it are happy and thriving...I love [the metaphor's] emphasis on 'with', not 'against' the environment. It's the perfect world that doesn't exist, but that is how it should be'* [P-OM]
- *'I think that's lovely... if you had all of the voices, so all of the marginalised, silenced and silent voices. And I say silenced because...the environment can't speak for itself but doesn't mean it shouldn't have a voice. So, to me this [metaphor] is one of a lot of hope. If we mean it as socio-equitable and environmentally resilient, that as a shared future would open up a world of opportunities, of knowledge, of practices that we currently, largely ignore...This would be the way forward, if it is a fairly shared future, because we have to be cognizant of the socio political context and the power disparitiesBut if it was a really shared future, that to me, is probably the most positive metaphor we*

could have. That everything we do is for each other and together and part of the ecosystem' [L-Man.]

Although the aptness criterion has been widely endorsed as an important criterion for assuring the productivity of a metaphor (Cornelissen, Kafouros and Lock, 2005; Cornelissen and Kafouros, 2008a), theoretical and empirical insights have similarly emphasized that the truly creative potential of metaphor requires the consideration of distance and difference between the target phenomena and the source metaphor (Cornelissen, Kafouros and Lock, 2005; Cornelissen and Kafouros, 2008a). Although aptness is necessary to make the metaphor make sense, difference and semantic distance is necessary to shock the theorist into rearranging their view of the target domain. Several potentially interesting metaphors from distant semantic domains were proposed by sustainable supply chain academics who took part in the interactive workshops. For example, workshop participants depicted the supply chain as a *biodiverse farmyard* and as a *constellation*, while AP-SCM suggested viewing the supply chain as an organ of the body. A preliminary evaluation might also assess these metaphors as potentially apt and rich.

However, in terms of actively working with a rich metaphor sourced from a more distant domain, distance may naturally be a practical barrier. This was illustrated most vividly through AP-SM's suggestion that the metaphor of SUSTAINABLE SUPPLY CHAIN AS POLITICAL CAMPAIGNING was interesting, but impractical:

'Political science and management are too far apart...I think this [metaphor] is amazing, I think it is very thought-provoking [but]...if you go too far away from the field, reviewers find it very hard to understand and judge your work, and then to get published. We are locked in this situation, we know it's not enough what we have, but when we try to bring something very different, it is rejected by the field, so I think this is a very fruitful avenue, but you would

need to think how we could bring such a thing such as political campaigning into a field that is discussing management of supply chains' [AP-SM]

The perception of going '*too far away*' from the supply chain field reflects longstanding critiques which have argued that metaphoric thinking causes scholars to be 'drawn far afield from that domain of experience they seek to know' (Pinder and Bourgeois, 1982; Smircich, 1983, p. 341). More practically, a key challenge relates to the capabilities of researchers to access and effectively deploy rich knowledge from more distant domains. Therefore, although the evaluation criteria proposed as part of the Metaphoric Transfer Pathways framework can be considered robust because they have been drawn from theoretical and empirical insights regarding the potential productivity of a metaphor for theory development, this does not take into account broader disciplinary conditions, factors and influences that may affect the impact of a metaphor in supporting theory development in different ways.

It is also worth noting that the evaluation criteria proposed in this chapter represent a parsimonious set of criteria which provide accessible guidance for guiding the identification and selection of metaphors as part of scholars' theorizing activities. These criteria represent an effort to recontextualize the broader guidance and evaluation criteria for immediate use by the sustainable supply chain community. However, other studies have also highlighted additional criteria that has explained the extent to which a metaphor has been influential in a field. For example, Cornelissen and Kafouros (2008a) emphasize the importance of the comprehensibility of a metaphor, which they define as the degree to which a metaphor is easy to understand, comprehend and makes plain sense. Additionally, Cornelissen (2006b, 2017) highlighted the criterion of concreteness, which means that the source concept is deemed to be sufficiently concrete (rather than abstract). This has been linked to conceptual metaphor theory and the

embodiment hypothesis (Lakoff and Johnson, 1980b), which, as has been alluded to in chapter 5, suggests that metaphors with source domains which are rooted in the human bodily experience, are preferred over more complex, cultural source domains. Cornelissen (2017) suggested that the pervasiveness of the machine metaphor in organization studies is attributable to its relative concreteness, as compared with other sociological or psychological metaphors which are relatively more abstract.

According to the concreteness principle, some of the novel metaphors proposed in this study using the Sustainability Paradigms Framework (Figure 9), such as SUPPLY CHAIN AS A SHARED FUTURE, or proposed by the sustainable supply chain academics, such as supply chain as *sound waves*, may be deemed interesting, rich, and potentially apt, but are ultimately less concrete, and according to some evidence may have less potential for supporting the community towards a new and accepted way of thinking about sustainable supply chains.

7.7. Conclusion.

This chapter aimed to explore how scholars can work consciously and effectively work with metaphor for the benefit of sustainable supply chain theory development. In so doing, it has developed the Metaphoric Transfer Pathways framework as a means by which the sustainable supply chain community can harness the liberating potential of metaphor for the benefit of sustainable supply chain theory development (the study's third objective).

The framework puts metaphor at the heart of a supply chain scholar's theory development efforts. In so doing, it emphasizes the widely accepted view of the value of metaphor as a device for stimulating creativity and imagination (Weick, 1989a; Boyd, 1994; Cornelissen, 2006b; Boxenbaum and Rouleau, 2011; Foropon and McLachlin, 2013; Swedberg, 2016). More

importantly, it strives to make explicit some practical ways in which a sustainable supply chain scholar may begin to identify and select metaphors with which to work in such theory development efforts.

The proposed pathways (re-enlivening dead/dormant metaphors, and searching for novel metaphors from distant domains), and the set of evaluation criteria (aptness, richness, and interestingness) highlight that scholars' approaches to identifying and selecting metaphors need not and should not be *carte blanche*. The evaluation criteria highlight the importance of considering the productivity of a metaphor for supporting supply chain theorization and therefore provide supply chain scholars with accessible guidance as to the conditions under which a metaphor may best serve the scholar's theorizing goals. This has thus far been largely omitted from supply chain literature on metaphor and theorizing.

Considering the framework in terms of the insights gained from this study's engagements with the scholarly community for which it is intended, the framework offers a convincing account of working with metaphors that both aligns with and stretches existing perspectives on how sustainable supply chain theory development can benefit from metaphor. However, its operationalization may still depend on other factors. For example, effectively leveraging and re-deploying the theoretical raw material that an *apt* and *interesting* metaphor may provide may partly depend on the development of multi-disciplinary research teams within which domain-specific knowledge can be shared and combined.

Thus, although the Metaphoric Transfer Pathways framework has provided an accessible starting point for engaging with metaphors, it has done so by attempting to navigate rather than reconcile the rich theory that exists on metaphor in the context of theory development. It is therefore intended that the Metaphoric Transfer Pathways framework acts as a starting point, rather than

an end point, for the operationalization of a metaphor perspective in sustainable supply chain research and theory. The next chapter, chapter 8 concludes the thesis by summarizing its core knowledge claims, key limitations as well as opportunities for future research.

Chapter 8 – Conclusions, limitations, and future research.

8.1. Introduction.

Many have suggested that the sustainability crisis is worsening (Lade *et al.*, 2019; Club of Rome, 2020; UNEP, 2021). Addressing this crisis requires efforts to step outside of the existing (unsustainable) reality to envision and theorize a truly sustainable socio-ecological order. This will be achieved through efforts at surfacing and reflecting upon existing tacit frames (Gladwin, Kennelly, and Krause, 1995) as well as constructing a new worldview (Ehrenfeld, 2008; Princen, 2010). This conceptual study has positioned metaphor as central to the contributions to be made to these efforts by the sustainable supply chain community.

Specifically, the study addressed three key objectives: *to demonstrate the scope and relevance of metaphor for the sustainable supply chain field, to critically engage with the metaphoric influences on sustainable supply chain theory development, and to harness the liberating potential of metaphor for the benefit of sustainable supply chain theory development.* These considerations can be considered important and timely. *Timely*, because they engage with and align with efforts by other sustainable supply chain scholars to address challenges in the progress of theory towards truly sustainable supply chains. *Important*, because metaphor is a fruitful locus of change in addressing the challenges facing sustainable supply chain theory development.

This focus on metaphor is sanctioned by an established view among multi-disciplinary scholars of the importance of metaphor in theory development (Morgan, 1980, 1997; Cornelissen, Kafouros and Lock, 2005), as well as in (changing) thinking and practice in order to achieve sustainability (Romaine, 1996; Princen, 2010; Larson, 2011). Although there was already some engagement with the issue of metaphor in the supply chain literature (Chen *et al.*, 2013; Foropon

and McLachlin, 2013) and although there was evidence that supply chain scholars were already (often more implicitly than explicitly) using metaphors in their efforts to theorize sustainable supply chains (Tate *et al.*, 2019; Wieland, 2021), this study's exploratory and reflective approach has enabled the contribution of knowledge that will enable more conscious and rigorous engagement with metaphor.

The aim of this final chapter is to take stock of what is now known as a result of the study, recognizing both its contributions and limitations, and therefore to consider what this means for future research. The remainder of the chapter is organized as follows. Section 8.2. reflects on the convincingness of the study's key contributions which are explicitly articulated in terms of McInnis' (2011) framework of conceptual contributions. This provides a ground for reflecting upon the limitations and future opportunities for taking a metaphor perspective in sustainable supply chain research. Section 8.3. then explores the limitations of the study, which predominantly relate to the underlying assumptions that have informed the metaphor perspective in this study, the depth of the systematic metaphor analysis and the overall conceptual nature of the thesis. Section 8.4. considers the opportunities for future research that are suggested by these limitations, as well as further important and interesting opportunities for using the work presented in this thesis for developing theory through the analysis of sustainable chain practice. Section 8.5. concludes the chapter, and the thesis, with a personal reflective account of the PhD *journey*.

8.2. Contributions to sustainable supply chain knowledge.

As has been discussed in chapter 3, convincingness is an appropriate quality criterion for this study's efforts to recontextualize metaphor theory for the benefit of sustainable supply chain

theory development. Convincingness is structured in terms of three dimensions – authenticity, plausibility, and criticality (Golden-Biddle and Locke, 1993). As a reminder, *authenticity* refers to demonstrating a close connection with the ‘everyday life encountered by the researcher in the field setting’ (Golden-Biddle and Locke, 1993, p. 599), *plausibility* refers to understanding where the community is ‘coming from’ so that the contribution of the study ‘makes sense’ to them (Golden-Biddle and Locke, 1993, p.600), and *criticality* refers to the ability to ‘activate the readers to re-examine assumptions that underly their work’ (Golden-Biddle and Locke, 1993, p. 600).

The thesis has represented an account of authentic encounters and efforts to make sense of and work with the expansive literature on metaphor in the context of sustainable supply chain thinking. In so doing, it has maintained a reflective approach which has acknowledged, rather than downplayed, the challenges that the study has faced. This, it is hoped, will engage the reader to reflect on their own assumptions about metaphor and its place in their own scholarly work. Most significantly, these experiences have led to the development of conceptual resources that will facilitate sustainable supply chain scholars’ efforts in engaging more consciously and rigorously with metaphor-based theory development. This is deemed to represent a plausible and valuable contribution to knowledge within the sustainable supply chain community by providing accessible guidance that will facilitate scholars’ engagement with metaphor in their theorizing activities.

Specifically, this study makes two minor and two major contributions to the sustainable supply chain field. Following guidance by Fawcett *et al.* (2014), the contributions of this study are classified according to MacInnis’ (2011) typology of conceptual contributions. The minor contributions are *advocating* a metaphor perspective in sustainable supply chain thinking and

summarizing root metaphors within sustainable supply chain theory. The major contributions are *typologizing* approaches to metaphor in sustainable supply chain theorizing, which has been captured in the development of the Approaches to Metaphor framework, and *revising* approaches to metaphorical imagination in sustainable supply chain theorizing, which has been captured in the formulation of the new Metaphoric Transfer Pathways framework. The nature and value of each of these contributions is discussed in turn in the remainder of this section.

8.2.1. Advocating a metaphor perspective in sustainable supply chain.

The first conceptual contribution is advocating the importance of taking a metaphor perspective in sustainable supply chain theorizing. Advocacy is a conceptual process which involves argumentation to justify or support a position or idea. Importantly, it is designed to enhance confidence in the idea (MacInnis, 2011). The assumptions underlying consideration of metaphor in organization and management theory exist at the relativist and subjectivist ends of ontological and epistemological debates. By contrast, the predominance of functionalism and the tendency towards theory testing rather than theory building in operations and supply chain management scholarship would therefore cast the metaphor perspective within sustainable supply chain theorizing as an outlier. On that basis, successfully advocating for the importance of metaphor in the development of sustainable supply chain theory provides the essential foundation of this thesis.

In advocating for metaphor in sustainable supply chain theorizing, the thesis re-ignites discussion and debate within the supply chain discipline about metaphor (Garud and Kotha, 1994; Ramsay and Caldwell, 2004; Chen *et al.*, 2013; Foropon and McLachlin, 2013). Without adequate or convincing argument, an emphasis on metaphor might seem like a flight of fancy against a

backdrop of research traditions which have long well-served supply chain theorizing. It might be viewed as an unnecessary exercise in simply re-stating what we already know in less precise (i.e., non-literal) terms (Cornelissen, 2004). Or, it might be viewed as a less than rigorous device for effectively capturing and communicating sustainable supply chain reality (Pinder and Bourgeois, 1982). These are some of the arguments that have surrounded the use of metaphor in operations, purchasing and supply management (c.f. Ramsay and Caldwell, 2004). One specific marker of quality in the process of advocating metaphor is therefore the ability to convincingly position metaphor not as an ‘optional’ artifact of the language used to ‘talk about’ sustainable supply chains, but rather as a central and unavoidable process by which theory and reality of supply chains is constructed (Lakoff and Johnson, 1980b; Morgan, 1997).

In advocating for metaphor, the thesis framed discussion of metaphor in sustainable supply theory development in terms of *taking a metaphor perspective*, which was defined in this thesis as ‘a general recognition of the central role that metaphoric conceptualization plays in constructing, understanding and exploring every day and scientific phenomena’. This framing aims to facilitate recognition of metaphor as more than a figure of speech or linguistic device. It captures metaphor as a cognitive process of meaning making. This framing therefore also accommodates different views of metaphor as both an unavoidable feature of everyday understanding, and a specific device for facilitating creativity within scientific efforts at theory development.

Based on theory drawn from the fields of cognitive linguistics (e.g., Lakoff and Johnson, 1980; Lakoff, 1999) and organizational theory (e.g., Morgan, 1980; Morgan, 1997; Cornelissen *et al.*, 2005), the metaphor perspective is useful for the sustainable supply chain field as it enhances the view *that* meaning of sustainable supply chains *is created*, by providing an attractive and simple

explanation for *how* that meaning is created: meaningfulness arises from structuring experience (Tsoukas, 2017) and that structure is understanding one thing in terms of another (i.e., metaphor). As has been discussed, this occurs for the most basic primary experiences and concepts, such as feelings of love, anger or knowing, as well as the more complex conceptual experiences of organizational and supply chain phenomena.

Viewed in this way, it becomes easier to recognize that the principles of the metaphor perspective lie behind recent work which has problematized dominant perspectives on supply chain research and theorizing by calling for scholars to reconceptualize and re-imagine supply chains (i.e., to ‘*see*’ the supply chain ‘*as*’ something else). For example, Wieland (2021) has recently called for the supply chain system to be re-interpreted as an organismic system which *dances* rather than a static mechanistic system which is *controlled*. According to Wieland (2021), to ‘*dance* the supply chain’ rather than ‘*manage* the supply chain’ is to highlight the potential for supply chains to transform and innovate, which is otherwise hidden by mechanistic assumptions. Additionally, Touboulic, McCarthy and Matthews (2020, p. 44) advocate for critical engaged research in the development of sustainable supply chain theory based on their view of supply chains ‘*as sites of human action [emphasis added]*’.

Against this backdrop, advocating a metaphor perspective is a timely contribution to sustainable supply chain knowledge because it offers one explanation for the challenges of developing sustainable supply chain theory. By emphasizing the metaphoric conceptualization processes that pervade everyday reasoning (Lakoff and Johnson, 1980a) and scholarly theorizing (Weick, 1989), the metaphor perspective also identifies metaphor as a locus of change for stimulating theory development and offers a formal process for re-imagining supply chains (e.g., Tate *et al.*, 2019; Wieland, 2021) based on the metaphoric (re)structuring of sustainable supply chains. To

achieve this requires an engagement with existing metaphoric conceptualizations and a process for working through metaphorical imagination. These are provided in the remaining contributions.

8.2.2. *Summarizing the metaphoric construction of sustainable supply chain.*

The second conceptual contribution is *summarizing* the metaphoric construction of sustainable supply chains in sustainable supply chain theory. Summarizing involves ‘tak[ing] stock of, digesting, recapping, and reducing what is known to a manageable set of key takeaways’ (MacInnis, 2011, p. 144). According to MacInnis (2011), the conceptual process of summarizing often considers empirical evidence either to summarize what is known in a field, or to summarize trends in the evolution of the field. Consistent with this, summarizing the metaphoric constructions of sustainable supply chains required supporting insight gained through a systematic analysis of the metaphors used among published academic literature within the sustainable supply chain field. The study therefore conducted the first systematic analysis of the metaphors underpinning sustainable supply chain theory and therefore contributes a map of the metaphoric landscape of the sustainable supply chain field.

The relevance of summarizing the metaphoric foundations of sustainable supply chain theory is predicated on the assumption that metaphors play a role in constructing sustainable supply chains and therefore sustainable supply chain theorizing. Therefore, summarizing the current dominant metaphoric constructions of sustainable supply chain theory through a systematic metaphor analysis supports the process of advocating a metaphor perspective by usefully *demonstrating* the extent to which sustainable supply chains *are* metaphorically constructed. The presentation of the results of the systematic metaphor analysis in chapter 5 demonstrates that common

terminology in sustainable supply chain discourse is metaphoric. The systematic metaphor analysis method helps to robustly identify terms which are metaphoric because they can be shown to be ‘linguistic utterance[s] in which the combination of words is literally deviant in the sense that terms that have originally or conventionally been employed in relation to a different concept or domain are applied and connected to a target term or concept’ within sustainable supply chain theory (Cornelissen, Kafouros and Lock, 2005, p. 1549).

In line with Cornelissen, Kafouros and Lock (2005) it can be assumed that these linguistic utterances reflect underlying root metaphors that inform conceptualizations and patterns of thinking within the sustainable supply chain field. Based on conceptual metaphor theory, the metaphors identified through the systematic metaphor analysis were thus further explored to argue the implications of these root metaphors for the development of sustainable supply chain knowledge (Andriessen and Gubbins, 2009).

This is deemed a valuable exercise because of an established argument that metaphors act as ‘selective filters on our attention, directing and controlling our perceptions and the way we understand the world’ (Ramsay and Caldwell, 2004, p. 80). Greater recognition of underlying metaphors that serve to pre-structure analyses of sustainable supply chains facilitates theorization efforts by providing a space for creatively re-structuring analyses by replacing established root metaphors with alternative, confrontational metaphoric framings (Alvesson and Sandberg, 2011). However, the potential limitations of this assumption should also be acknowledged and will be discussed in section 8.3.

8.2.3. *Differentiating* approaches to metaphor in sustainable supply chain theorizing – The Approaches to Metaphor framework.

Although the processes of advocating a metaphor perspective and thus summarizing the metaphoric constructions of sustainable supply chains through the systematic metaphor analysis are considered useful contributions to facilitating efforts to think differently about sustainable supply chains, the major contributions of this work exist in the form of conceptual resources which can guide scholars in their efforts to work with metaphor in sustainable supply chain theorizing.

The first of these conceptual resources is the Approaches to Metaphor framework (developed in chapter 4) which differentiates approaches to metaphor in sustainable supply chain theorizing. *Differentiating* is a conceptual contribution which adds insight by ‘distinguishing, parsing, dimensionalizing, classifying or categorizing an entity’ (MacInnis, 2011, p. 145). This has been achieved through the development of a typology – the Approaches to Metaphor framework. Typologies can be useful for providing a more organized view of fragmented research to map and explain the differences between variants of a concept (Jaakkola, 2020).

For the sustainable supply chain community, the Approaches to Metaphor framework serves two key functions. First, the Approaches to Metaphor framework presents a view of metaphor which is broader and more differentiated than has thus far been presented in accounts of metaphor within operations, purchasing and supply chain theory (Garud and Kotha, 1994; Chen *et al.*, 2013; Foropon and McLachlin, 2013). As has been mentioned in chapter 4, dominant accounts of metaphor among supply chain scholars either fail to differentiate effectively between uses and impacts of metaphor in supply chain theorizing (Foropon and McLachlin, 2013), or present a more unilateral view which implies that there is only *one way* to work with metaphor in

theorizing (Garud and Kotha, 1994; Chen *et al.*, 2013). The Approaches to Metaphor characterizes metaphor as a more multi-faceted concept by capturing existing ideas about the different capabilities of metaphors.

Secondly, and even more importantly, it *extends* existing metaphor literature by reconfiguring the traditional approaches to categorising metaphors one-dimensionally (e.g., as live-dormant-dead (Tsoukas, 1993), or as constraining-generating (Morgan, 1997)) by adding an orthogonal dimension related to theorizing, which recognizes theorizing as either a process of gap-spotting or problematization (Alvesson and Sandberg, 2011).

In this regard, the framework may also be of use to scholars in organizational theory. Chapter 4 demonstrated that although typologies of metaphor in organizational research and theory already exist, the novelty of the Approaches to Metaphor framework is in its inclusion of the theory development dimension which explicitly acknowledges problematization as an alternative to the more traditional gap-filling approaches to theory development. Although the value of metaphors for problematization is implicit within numerous accounts (Chia, 1996; Morgan, 1997; Cornelissen and Durand, 2014) it has not previously been captured explicitly.

Typologies are two-dimensional taxonomies which are appropriate when one dimension is inadequate to classify an item and represent a rudimentary building block of theory (Meredith, 1993, p. 8). The ‘Approaches to Metaphor’ framework therefore represents a typology as a rudimentary conceptual model of metaphor-based theory development. Although metaphor has been considered very widely across disciplines, and in multiple academic and organizational contexts (Inns, 2002), the Approaches to Metaphor typology is rooted in existing literature on metaphor in the specific context of theory development thus providing important conceptual boundaries for the knowledge claims (Whetten, 1989). The Approaches to Metaphor framework

specifically contributes to the sustainable supply chain field by differentiating between the variety of ways in which sustainable supply chain theorists can variously, or most appropriately, engage with metaphor according to their specific theorization goals (gap-filling or problematization).

8.2.4. *Revising* guidance for metaphor-based theory development – The Metaphoric Transfer Pathways framework.

The final major contribution to the sustainable supply chain field exists in the form of the Metaphor Transfer Pathways framework. This is the second key conceptual resource that has been developed through this study. According to MacInnis' (2011) typology of conceptual contributions, it is characterized as a *revision* of existing guidance in order to guide sustainable supply chain scholars efforts in metaphor-based theory development. The Metaphoric Transfer Pathways framework extends existing guidance on working with metaphor from a theory development perspective. Most importantly, it extends existing guidance on theorizing through metaphor within the supply chain field (Chen *et al.*, 2013) by situating work with metaphor within the broader context of theorizing activities, including engagement with the existing literature and the evaluation of existing metaphors as a precursor to the selection and formal processing of a metaphor through the formal metaphoric transfer process. Put simply, it guides scholars in how to search for and select metaphors to work with in the first place. It was developed from first-hand encounters and experiences of efforts to identify metaphors to work with in theorizing activities, which exposed the dearth of process-based guidance on how to engage with metaphors in supply chain scholarship.

Recent studies that have creatively drawn upon novel metaphors for sustainable supply chain theory development (e.g., Tate *et al.*, 2019; Wieland, 2021) are inspiring, but make no reference

to methodological literature on metaphor to underpin their metaphor-based theory development. Tate *et al.* (2019) classify their work as theory building through case study. This suggests that there is an emerging appetite for metaphor-based approaches in sustainable supply chain theory development, but also that there is a need for a more informed methodological grounding. As conscious and rigorous engagement with metaphors is a relatively new approach among sustainable supply chain scholars, the Metaphoric Transfers Pathways framework seeks to ‘make sense’ to scholars by engaging them from their status quo. It is most likely that sustainable supply chain scholars who are motivated by a metaphor perspective will first encounter metaphors which are dormant and mainstream within existing sustainable supply chain discourse. The Metaphoric Transfer Pathways framework recognises this and prompts the evaluation of those existing metaphors as a trigger towards either the re-enlivenment method or searching for novel metaphor(s) method for identifying metaphors with which to work. The framework therefore makes more transparent and accessible the task of structuring theorizing activities in terms of metaphors.

8.3. Exploring the limitations of the study.

Although the contributions that have emerged from the study are deemed to be convincing, the study is not without its limitations. The study has taken a perspective which casts metaphor as the master trope. It follows Morgan’s (1983, p. 602) view that metaphor ‘makes meaning in a primal way’ while other tropes, such as metonymy, synecdoche and irony are ‘secondary forms within the domain or context forged through metaphor’. However, this may serve to reduce the precision of thought around the specific value for theory development of a range of alternative tropes. In particular, other tropes which are more exclusively characterized for highlighting tensions and dissonance, including, anomaly, irony and paradox, have been seen as requiring a

higher level of cognitive development than metaphor and have been seen as even more fruitful for shocking scholars into seeing anew (Oswick, Keenoy and Grant, 2002; Oswick, Putnam and Keenoy, 2004).

Consideration of metaphor in sustainable supply chain theory development may therefore be more usefully enhanced by a combined consideration of metaphor alongside other tropes. In particular, paradox may resonate strongly with theory development efforts around sustainability given recent and increasing recognition of a paradox lens to better acknowledge and analyse tensions in sustainability and sustainable supply chain phenomena (Hahn *et al.*, 2014; Matthews *et al.*, 2016). The metaphor perspective proposed in this thesis endorses pluralistic perspectives, analyses and theory building efforts, but it does not highlight the need to recognize or try to resolve tensions that exist between those alternative images (Poole and van de Ven, 1989). The combination of metaphoric and paradoxical lenses in theorizing sustainable supply chain phenomena may better serve efforts to analyse and resolve the *tensions* that are created through co-existing metaphoric constructions of organizations and supply chains, either by supply chain practitioners or by supply chain theorists.

It may also be considered a limitation that the work is predominantly conceptual. It has drawn on well-established, influential peer-reviewed literature on metaphor and its role in theory development and it represents an authentic and plausible recontextualization of these works through reflecting on first-hand engagement with novel metaphors and with the academic community. It should however be acknowledged that the challenges faced may be a function of the experience of the researcher. Moreover, the Metaphoric Transfer Pathways framework, and its evaluation criteria, have not yet been fully explored and ‘tested’ for their value to scholars’

theorization activities. Further deployment and reflection on the framework will serve to refine and ensure its utility in enhancing scholarly efforts at metaphor-based theory development.

The systematic metaphor analysis procedure that was used to construct the metaphoric landscape of sustainable supply chain theory focused on linguistic metaphors associated with the umbrella concepts of *supply chain* and *sustainability* to explore the metaphoric construction of *sustainable supply chain*. The analysis therefore omitted a more fine-grained analysis of more specific supply chain-related phenomena and concepts, such as supply chain *relationships* or *knowledge* in supply chains. These are central to discussions of dynamism and transformation associated with sustainable supply chains (Beske, Land and Seuring, 2014; Touboulic, Chicksand and Walker, 2014) and are themselves abstract concepts which have been metaphorically constructed (Andriessen and Gubbins, 2009; Andriessen, 2006). The systematic metaphor analysis procedure presents an opportunity for focused analysis of the metaphor constructions of these concepts as they are used in sustainable supply chain scholarship. This may facilitate efforts at theorizing the value of relationships and knowledge management in transformational processes for sustainability.

Finally, the root metaphors identified through the systematic metaphor analysis were constructed from an aggregate list of all the linguistic metaphors that were identified across the sample. The analysis therefore did not allow for analysing if certain metaphors were predominantly used by certain authors or if there were any notable trends or differences in which metaphors were used between journals or between cultural backgrounds. It did not allow for accessing the intent of the author who used those metaphors in their text, or for understanding whether the authors behind each paper truly, predominantly, or consciously conceptualized the supply chain as, for example,

machine (SUPPLY CHAIN AS MACHINE) or political system (SUPPLY CHAIN AS POLITICAL SYSTEM) when using linguistic metaphors associated with those root metaphors.

There will likely be instances where linguistic metaphors have become very disconnected from their source domain to the extent that sustainable supply chain scholars do not plausibly acknowledge the term as metaphoric (i.e., dead). Some suggest that scholars may simply be ‘schooled into using certain words’ (Ortenblad, 2017, p. 59). The analysis was therefore partly based on an assumption that metaphors which may have become habituated within a field still retain their metaphoric element and therefore still have the *potential* to unconsciously influence scholarly reasoning (Lakoff, 2002; Painter-Morland, Demuijnck and Ornati, 2017). It also assumes the importance of basic primary metaphors in influencing the meaning of more complex metaphor constructions of supply chains and sustainable supply chains. In this regard, some of the metaphors identified through the analysis and the arguments for how these metaphors may influence sustainable supply chain theorizing may lack plausibility in the eyes of some sustainable supply chain scholars. It is hoped at least that the depiction will nonetheless prompt critical reflection on the metaphoric conceptualizations which may inform their work.

8.4. Opportunities for future research.

The limitations presented in section 8.3. point towards some immediate opportunities for future research. The results of the systematic metaphor analysis procedure, and the associated Metaphor Identification Procedure, point towards opportunities to use the procedure in more focused analyses of the metaphoric conceptualizations of key concepts that are using within sustainable supply chain theorizing. Most notably, perhaps, is Elkington’s (1997) *triple bottom line* metaphor for sustainability which is at the heart of sustainable supply chain theory (Carter and Rogers, 2008). This has been deemed a powerful metaphoric conceptualization of sustainability

(Adams, Frost and Webber, 2013; Henriques and Richardson, 2013) but it has been challenged for what elements of sustainability it ‘hides’, such as diversity (Henriques, 2013), and Elkington (2018) himself has sought to recall the concept on the basis of the way its meaning has been changed over time. A focused evaluation of the *triple bottom line* metaphor (and other influential metaphoric conceptualizations, such as *natural capital*) in sustainable supply chain theory, using the evaluation criteria outlined in chapter 7, may make more transparent the implications of this metaphor for continued sustainable supply chain theorizing, which may facilitate ongoing efforts at dislodging dominant logics (Montabon, Pagell and Wu, 2016) and developing ‘next generation thinking’ (Markman and Krause, 2016, p. 4).

The study has focused on metaphor from the perspective of developing theory through creative and speculative thinking and reasoning. In so doing, it has omitted explicit consideration of metaphor in the context of theory development through ‘constructing mystery’ through empirical observation (Alvesson and Kärreman, 2007). As a field that is rooted in practice, and which strives to contribute to the improvement of sustainable supply chain practice (Touboulic, McCarthy and Matthews, 2020), it seems the greatest opportunities for future research relate to leveraging metaphor for facilitating supply chain scholars’ efforts in analyzing and understanding sustainable supply chain practice as another route towards the development of interesting theory (Alvesson and Kärreman, 2007; Touboulic, McCarthy and Matthews, 2020). It may be used to enhance the emerging concerns for more critical engaged research (Van de Ven, 2007; Touboulic and Walker, 2016; Touboulic, McCarthy and Matthews, 2020), and interpretive perspectives (Darby, Fugate and Murray, 2019) in sustainable supply chain research.

There is a long tradition of leveraging the liberating capabilities of metaphor for the specific purposes of empirically analysing and developing organizations (Barrett and Cooperrider, 1990;

Marshak, 1996; Morgan, 1997; Akin and Palmer, 2000; Ortenblad, 2017; Tsoukas, 2017). A recent typology of approaches to metaphor in organizational analysis by Ortenblad (2017) usefully illustrates the range of approaches. For the purposes of building on the contributions provided by the present study to support future research, there seem to be two particularly interesting opportunities.

Firstly, further work can use the evaluation criteria depicted in chapter 7 to select among the metaphors identified by the systematic analysis in chapter 5, or the new metaphors identified in chapter 6, as a specific lens to analyse sustainable supply chain phenomena in practice. This may represent the truest reflection of what Morgan's (1997) most famous work intended. For example, the SUSTAINABLE SUPPLY CHAIN MANAGEMENT AS POLITICAL CAMPAIGNING metaphor may be seen as an *interesting*, *rich*, and potentially *apt* metaphor that could act as a lens to interpret sustainable supply chain strategy development, behaviour, and communication. The evaluation criteria suggest that some may be more fruitful than others. This would encourage scholars to select metaphors that are the most *interesting*, that is, metaphors that are distant from their own, or the field's, dominant metaphoric conceptualizations of the sustainable supply chain phenomenon being researched.

Secondly, metaphoric analysis akin to the procedure depicted in chapter 5 presents an epistemological perspective and methodological approach that may provide access to knowledge that is not accessible through more positivistic qualitative research methods (such as semi-structured interview protocols) that predominate in sustainable supply chain research (e.g., Pagell and Wu, 2009; Darby, Fugate and Murray, 2019). For example, Steger (2007) used metaphor analysis to understand how managers coped with complex organizational change. Their analysis revealed loneliness as an important factor, even though loneliness was not expressed by the

participants themselves. This approach can therefore be used complementarily as part of more interpretive insights into organizations' understanding and constructions of sustainable supply chain phenomena, in order to identify and implement appropriate interventions for sustainable supply chain development, at the same time as developing novel theoretical insight (Touboulic, McCarthy and Matthews, 2020).

8.5. A final personal reflection.

It is sometimes said that students who are new to a field arrive with a naiveté which is (regrettably) lost as they become trained in the dominant ways of the field. Perhaps my naiveté was partly responsible for identifying the idea that is at the heart of the thesis.

I first came to sustainability as a paradigmatic issue, through the likes of Gladwin, Kennelly, and Krause (1995), rather than as a triple bottom line business management issue, a technical supply chain management issue, or a scientific issue. In the early years of the study, I struggled to make sense of the framing of sustainability in sustainable supply chain literature. To me, the field seemed to be trying to 'use' the concept of sustainability 'for' the benefit of traditional supply chain management goals, rather than using the management of supply chains 'for' the benefit of sustainability. This was difficult to articulate, and legitimate as a true research concern, and I came to rationalize it in terms of my own naiveté: 'It must just be me.'

In 2016, a number of articles published in the Journal of Supply Chain Management offered a (metaphorical) lifeline: specifically Montabon, Pagell and Wu (2016), Markman and Krause (2016), and Matthews *et al.* (2016). They were instrumental in finding and demonstrating legitimacy in my work.

In the same year, I experienced my first major ‘aha’ moment in reading the following section from the seminal *Metaphors We Live By* (Lakoff and Johnson, 1980b, p. 5):

‘It is important to see that we don’t just talk about arguments in terms of war. We can actually win or lose an argument. We see the person we are arguing with as an opponent. We attack his [sic] positions and we defend our own... It is in this sense that the ARGUMENT IS WAR metaphor is one that we live by in this culture; it structures the actions we perform in arguing. Try to imagine a culture where arguments are not viewed in terms of war, where no one wins or loses, where there is no sense of attacking or defending, gaining, or losing ground. Imagine a culture where an argument is viewed as a dance, the participants are seen as performers, and the goal is to perform in a balanced and aesthetically pleasing way.’

Together, these encounters influenced and legitimized the core assumptions that have underpinned this work - that metaphors are central to thinking about, and changing our thinking about, sustainable supply chains. If arguments were only conceptualized as dancing, instead of war, they would no longer exist as we know them. Couldn’t we say the same about supply chains? Do supply chains exist as we know them, in a sustainable world? I wrote a working paper expressing this thesis, which won Best Paper at the 2016 internal conference in the South Wales Business School of the University of South Wales, and which truly kick-started what has been presented in this thesis.

In the years since 2016, the journey has been one of, to use Morgan’s (1997, pp. 5–6) phraseology, ‘becoming skilled in the art of using metaphor’. At least partly. The resources developed in the thesis are ones that I believe I would have benefitted from at the start of this

thesis and therefore I hope my experiences, and the resultant guidance, will be useful to other scholars.

But the journey of this thesis has also made me realise that I have only scratched the surface of what is possible in terms of metaphor and sustainable supply chain management. Without wanting to resort to clichés, I feel that I now know more about what I don't know than what I do know about metaphor and about its value for sustainable supply chain theory development.

Some of the most influential experiences on this journey have been opportunities to share and discuss my work with the academic community. This has included attendances at EurOMA Sustainable Operations and Supply Chain conferences in 2018, 2019 and 2020. I was also invited to lead a seminar to discuss my Journal of Supply Chain Management paper (Stephens *et al.*, 2021) at Copenhagen Business School in 2021. These have led to new connections with sustainable supply chain scholars which are still challenging me to further apply, explore, and enhance the application of metaphorical imagination for the benefit of sustainable supply chain theory development. Further developments in the field suggest there is fertile ground for metaphorical imagination within sustainable supply chain scholarship. To say I am excited, would be an understatement.

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Appendix 2. Template of informed consent forms for academic interviews.



STUDY CONSENT FORM

Title of Project: **TOWARDS IMAGES OF SUPPLY CHAINS IN A SUSTAINABLE WORLD. A DOCTORAL RESEARCH STUDY.**

Name of Researcher: **Victoria Stephens** (Victoria.stephens@southwales.ac.uk)

Name of supervisor: **Professor Hefin Rowlands** (hefin.rowlands@southwales.ac.uk) and **Dr. Lee Matthews**

Please **(initial)** all boxes

I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, and for my data to be withdrawn (until it is no longer practical to do so) without any consequence to myself.	
I agree to my participation being audio recorded and it's been explained how this data will be stored, destroyed, and anonymised.	
I agree to my anonymised data being used in study specific reports and subsequent articles that will appear in academic journals as part of this study.	
I agree to take part in the above study.	

Name of participant	Date	Signature
Name of researcher taking consent	Date	Signature

Appendix 3. Early explorations and explications of four novel metaphors.

SUPPLY CHAIN as SHARED FUTURE

The *shared future* metaphor was initially partly inspired by and derived from constructionist images of organizations presented by Morgan (1997) including organizations as *cultures*, and organizations as *flux and transformation*. It reflects a view of supply chains as socially constructed. It highlights the view that the reality of supply chain sustainability exists as much in the minds of its stakeholders, as in any ‘concrete structures, rules, and relations’ (Morgan, 1997, p. 142). From this perspective, it emphasises the symbolic and ritualistic, rather than rational or objective, status, and qualities of sustainable supply chain practices. As symbols and rituals that construct meaning within supply chains, sustainable supply chain practices, such as compliance audits or sustainable supplier development programmes, thus become part of how the meaning (i.e., the reality) of supply chain sustainability is continually (co-)constructed and re-constructed.

The metaphor therefore seems to resonate strongly with the constructionist paradigm of Matthews *et al.*'s (2016) sustainability paradigms framework. The constructionist paradigm is primarily concerned with how stakeholders make sense of sustainability. A constructionist explanation for the lack of sustainability benefits from sustainable supply chain practices (i.e., a lack of environmental effectiveness, Matthews, 2016) centres on stakeholders' framing of the scale and scope of action required to achieve sustainability in the first place. The metaphor therefore foregrounds concern with seeing sustainable supply chain practices as sites of meaning creation. It therefore emphasises a research shift away from instrumental concerns with the practice and outcomes of sustainable supply chain activity, towards concern to understand the meaning of those practices, and of sustainability, as experienced by stakeholders. This thus demands more interpretive research projects that engage a variety of voices.

Although ‘symbolic’ or ‘ritualistic’ practices have been constructed as those practices which do not have positive material impact on, for example, real levels of carbon emissions (Matthews, 2016), or the lives and wellbeing of workers (Islam, Deegan and Gray, 2018), the shared future metaphor shifts a view on the term ‘symbolic’ to capture any and all sustainable supply chain practices and strategies which contribute to the construction of sustainable supply chain meaning, whether they have sufficiently positive material impact or not. The value of such ‘symbolic’ practices in SSCM has been acknowledged (Bowen, 2015; Matthews, 2016). For example, practices which do not lead to material change can still have an indirect benefit of raising awareness of sustainability among suppliers or other stakeholders and can thus be seen as useful in the process of moving towards sustainability objectives.

Seeing sustainable supply chains as shared future forces greater reflection on the nature of the ‘future’ that is to be achieved. Such a future orientation thus resonates with the sustainability agenda, but it also brings with it some risks that reflect existing concerns around the sustainable supply chain as journey metaphor. More importantly, though perhaps, is that through its constructionist emphasis on the mechanisms of meaning-making, sustainable supply chain as shared future also emphasises that the enactment of sustainable supply chains in the present will similarly construct the future of the sustainable supply chain. It has been suggested that organizations' sustainable supply chain strategies are path-dependent, with an organization's historical development influencing and constraining what is perceived to be desirable or possible in sustainable supply chain management (Pagell and Wu, 2017).

The shared future metaphor shifts the orientation towards the future, instead of the past, to re-emphasise the place of present action in the construction of the future. Following Morgan's (1997) discussion of the culture metaphor, this can be emphasised as a strength of the shared future metaphor for its ability 'to empower organizations to take responsibility for the future in an active way and help them appreciate that they themselves often create the constraints, barriers, and situations that cause them problems' (Morgan, 1997, p. 149).

However, Morgan's (1997) discussion of culture has been critiqued for presenting a tension in viewing culture both in anthropological terms as a process embedded in context (i.e., culture is something the organization is), as well as in more managerialist terms as a practical tool that managers can use (i.e., culture is something the organization has). This highlights an important point about the extent of agency in the change processes for sustainability and preliminary assumptions about the potential ability of supply chain stakeholders to actively affect meaning making processes in a way which facilitates sustainability. The constructionist perspective on sustainability (Matthews *et al.*, 2016) assumes stakeholders' agency in the change processes for sustainability. The metaphor resonates with a stream of literature that has sought to better understand the interactions among people throughout the chain that are required to build trust, collaborate, and effect sustainable change – that is, how to get everyone to understand the key issues and embrace the new vision (quarshie, salmi and leuschner, 2016; van der heijden and cramer, 2017). However, this arguably assumes agency, and a view of the supply chain's shared future as something the supply chain *has* (and therefore can be controlled) rather than something the supply chain *is* (and therefore can only be understood).

The metaphor is underwritten by assumptions of soft anthropocentrism. With its assumption that the meaning (and thus the reality) of the supply chain is socially constructed, the metaphor also usefully emphasises that human-nature relations are also socially constructed. SSCs as Shared Futures shifts the view of supply chains as interacting but distinct from their environment (natural, and otherwise) (which can be seen as an assumption of a functionalist perspective on the supply chain as organism metaphor) towards being integrated and indistinguishable: it thus emphasises that a sustainable supply chain future is fundamentally with its environment, not against or in reaction to an external, uncontrollable wider environment. Inherently, this resonates with Gladwin *et al.*'s (1995) rhetorical question: 'how many organizations could exist in the absence of oxygen production, fresh water supply or fertile soil?', as well as broader idealistic visions sustainability in broad philosophical as well as material terms (Ehrenfeld, 2008). In its emphasis on societal meaning-making, this metaphor fails to give the natural environment a more equitable status.

SUPPLY CHAIN as BRAIN

I initially proposed this metaphor based on an elaboration of the supply chain as organism metaphor and an awareness of the potential synergy between negative feedback as a means by which to learn and evolve in a way which is consistent with the ecologically dominant logic.

The immediate association that is made with such a metaphor is that of learning. Importantly, the link with targets and goals is also central to this metaphor and discussion of its potential implications and value for sustainable supply chain theorizing. The metaphor of supply chain as brain constructs supply chain intelligence as emergent. Instead of requiring tight control and leadership, the metaphor suggests that the management of supply chains requires a sense of vision, norms, values, and limits that provide a space within which learning, and

innovation can occur. Instead of emphasising sustainability goals to be achieved, it shifts the focus towards sustainability limits to guide behaviour. The field of cybernetics is characterised by the issue of negative feedback and regulation based on what should not occur, as opposed to what should. supply chain as brain might thus offer us a site by which to creatively challenge SSC's current emphasis on 'goals' by emphasising that 'effective management depends as much on the selection of limits that are to be placed on behaviour as the active pursuit of desired goals' (Morgan, 1997).

The idea of limits or constraints as a necessary condition for truly sustainable supply chains has been highlighted by Montabon *et al.* (2016) through the introduction of the ecologically dominant logic. According to Montabon *et al.* (2016), the ecologically dominant logic tells companies to 'make as much money as possible after you have satisfied ecological and societal stakeholders' (Montabon *et al.*, 2016, p.19). Yet, by contrast, one of the most popular definitions in the field of SSCM suggests that SSCM is 'the management of material, information, and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development...into account, which are derived from customer and stakeholder requirements' (Seuring and Muller, 2008). Thinking instead of a supply chain as a brain encourages us to think about developing sustainable supply chains through the identification of socio-ecological limits for all organizations as parameters which set the boundaries of space within which organizations can learn and innovate towards economic performance success.

An interesting point of reflection for this metaphor relates to the multiple alternative metaphors by which the brain itself has been scientifically conceptualised. Morgan (1997) highlights alternative conceptualisations of brain as, for example an information processing system wherein the brain is assumed to receive and encode inputs, which are stored and retrieved in the form of a memory system and stimulates action in line with the information received. Alternatively, the brain has been studied as a holographic system in which 'qualities of the whole are enfolded in all the parts so that the system has an ability to self-organize and regenerate itself on a continuous basis' (Morgan, 1997, p.100).

SUPPLY CHAIN as GARDENING TOOL

This metaphor was inspired by data presented in Barter and Russell (2013) which demonstrated that organizational leaders constructed their organizations as 'tool[s] to deliver on social and environmental change' and illustrated how those organizational leaders expressed 'ambivalence regarding the ongoing operation of their organization provided wider social and environmental changes are realised'. It was also inspired by a view of sustainability as flourishing (Ehrenfeld, 2008). Ehrenfeld (2008) suggested that 'sustainability can emerge only when modern humans adopt a new story that will change their behaviour such that flourishing rather than unsustainability shows up in action'. The etymology of flourishing is 'full of flowers' and thus resonates with the common cultural experience, and therefore accessible image, of a garden. Moreover, the garden metaphor has been implicit within broader discussions of sustainable development generally and captures ideas related to changing in harmony with nature and considering what and when it is appropriate to plant, grow, or harvest (Audebrand, 2010) based on ecological constraints.

The key underwritten assumption of this metaphor relates to the purpose of a supply chain as being a central means by which desired ends of societal flourishing is achieved. This counters the dominant approaches in SSCM theory which have tended to construct sustainability-related action to achieve the desired ends of improved financial performance. The 'tool'

metaphor therefore re-focuses the purpose of the supply chain as a necessary instrument to ensure natural flourishing. As a tool, the supply chain arguably has no legitimate purpose beyond its success in enabling a flourishing garden. In our common cultural understanding of the role of the gardener and her tools, what is rational is intrinsically linked to the gardener's super-ordinate goal of maintaining a thriving garden for the benefit of its users. In this regard, the logic of the image of a gardener and her gardening tool suggests that success in the gardeners' terms is dependent upon success in the garden's terms.

Through this metaphor we might activate new linguistic metaphors for supply chains including the noun phrase, supply chain *utility*, and thus talk of using the supply chain for the achievement of socio-ecological sustainability. This sentiment is already illustrated in the discourse used by the burgeoning global B-corps movement, which frames B-Corp organizations 'using business as a force for good' (<https://bcorporation.uk/about-b-corps>). Similarly, Patagonia's vision statement was for a long time to '*...use* business to inspire and implement solutions to the environmental crisis [emphasis added]'. Interestingly, in the data from the systematic metaphor analysis the verb, *to use*, was employed in sustainable supply chain discourse only in the context of how sustainability could be used in different contexts (Fritz and Silva, 2018). However, the phrase to use supply chains was never found in the sample. In evoking a new verb, such as use, to talk about supply chains we can recast the supply chain itself as a resource. In so doing, there is a shift in focus away from outputs (which characterises a machine view of supply chain) to outcomes: 'sustainable outcomes are the effects of projects, processes or business models designed specifically for meeting TBL sustainability goals' (Tate *et al.*, 2019, p. 61).

As a gardening tool, the supply chain's primary purpose can be more easily constructed and comprehended as a means by which to tend and work towards the creation of a flourishing society. My aim with such a metaphor is to re-cast what may be considered rational for supply chains as they exist and operate in a globalised twenty-first century society. Through his imagery of organizations as instruments of domination, Morgan (1997) critiques the logic of rationality, highlighting that while a prevailing view of rational organizations seems to protect and endorse all interests, what might be rational from a profitability and shareholder's perspective (the dominant functionalist perspective [Banerjee, 2012]) may be far from rational for other stakeholders. Through the domination metaphor, Morgan (1997) argues that we should be asking the question, rational for whom? (Morgan 1997, p.341). In the context of global value chains, we might similarly ask, value for whom? (McCarthy, Touboulic and Matthews, 2018). The gardening tool metaphor may therefore be seen to facilitate responses to recent calls for a fundamental re-thinking of what value means (Pagell and Shevchenko, 2014). It also extends the issue of responsibility, towards expectation and obligation (Scheyvens, Banks and Hughes, 2016). This is similarly in line with Gladwin *et al.*'s (1995) view that the dominant institution in any society needs to take responsibility for the whole. In this regard, the metaphor can be seen to situate the supply chain within its broader context.

Through this view, the metaphor assumes the prioritisation of assuring the flourishing of the system it serves, and thus resonates with an ecologically dominant logic (EDL) (Montabon *et al.*, 2016). The EDL prioritises the environmental dimension of the TBL. This emphasis thus also suggests that the gardening tool metaphor particularly resonates with the assumptions of the critical paradigm of sustainability (Matthews *et al.*, 2016). Within the critical paradigm, ecocentricity is a key issue when thinking about business-nature relations (Shrivastava, 1995; Banerjee, 2012). But the Gardening Tool metaphor may more strongly, perhaps resonate with assumptions of the systemic paradigm of sustainability (Matthews *et al.*, 2016). The systemic paradigm takes a system level view of sustainability and thus conceives supply chain

sustainability efforts in terms of their embeddedness within the broader political economic system which determines the rules according to which they operate (Matthews, 2016): ‘if the political-economic system is geared towards growth in material and energy throughput, this will likely be reproduced at the level of the corporation’ (Matthews, 2016, p.46).

I am aware however that this metaphor re-constructs the view of the supply chain at a broader system level and in development terms, which may be perceived as more fitting within parallel streams of research on development chains rather than corporate organizations’ chains of supply. However, considering observations on the extent to which global resources and capabilities are concentrated within corporations, the responsibility and real mechanism for change arguably lies here and, reiterating what has been well-stated in the literature, demands a sustainable supply chain agenda that thinks far more broadly than the benefit of sustainable supply chain practices for corporate finances. The key assumption of the gardening tool metaphor is that the purpose of the tool is to serve the broader system.

SUSTAINABLE SUPPLY CHAIN AS POLITICAL CAMPAIGNING

This metaphor was identified as a vehicle by which to explore strategies of sustainable supply chain management. In so doing, it responds to calls for greater emphasis at the individual level of SSCM considerations. Individual, behavioural, and cognitive considerations are less well attended than the meso and macro level concerns of SSCM (Signori, Flint and Golicic, 2015). Relatedly, theoretical lenses that attend the individual level have been less frequently adopted. The Behavioural theory of the firm is a little used theoretical perspective in SCM generally, and SSCM specifically (Kirchoff, Omar and Fugate, 2016). But its rare applications have highlighted important and challenging issues related to SSCM in general and sustainable supplier engagement particularly (Kirchoff, Omar and Fugate, 2016). In this regard it may facilitate and sanction a richer and widespread engagement with alternative theoretical lenses, such as the behavioural theory of the firm which is consistent with the political arena metaphor.

Traditionally research in inter-organizational interaction for sustainability organizations has focused on formal processes of negotiating and contracting to overcome differences in culture, management styles and expertise. However, there is increasing suggestion that informal bargaining interactions are essential in embedding sustainability within organizations, and thus should be seen as an essential element of inter-organizational and supply chain collaboration efforts regarding sustainability (van der Heijden and Cramer, 2017). This is evidenced by the observation that supplier engagement is less well-represented in sustainable supply chain theory than other constructs of sustainable supply chain strategy such as monitoring and collaboration, despite the prevalence of sustainable engagement in industrial policy and practice (Matthews, 2016).

Drawing on the politics source domain and building on the discussions presented earlier in the chapter, the metaphor may explicitly facilitate a shift to a process-view of SSCM, rather than a content-based view of SSCM – that is a focus on how to achieve SSCM, rather than a focus on codifying what is SSCM - as has recently been called for. Touboulic and Walker (2016) call for more research ‘to actually understand how organizations work together and how SSCM as a radical transformation of business practices unfolds’. They articulate that ‘the core of the sustainability agenda is essentially change of views and practices...sustainability research is not about stability and regularities but about the identification of levers for change and ways of improving current practice’ (Touboulic and Walker, 2016, p. 309). The political campaigning metaphor therefore emphasises a much

more engaged, individual, and activist perspective on managerial activities which emphasise the need to engage interest in and commitment to sustainability agendas and policies, to overcome resistance and drive supply chain change.