

**Improvising in Pursuit of a Circular Economy**  
**Melissa Edwards, Tamsin Angus-Leppan and Suzanne Benn**

**ABSTRACT:** *Proclaimed as the means to address limited resources and ensuring zero waste, while enabling jobs growth and reducing environmental impact, circular economy concepts are increasingly being operationalized. This exploratory research questions how leaders implement circular economy approaches within their operations despite these being juxtaposed against the dominant linear economy. Interviews conducted with self-identified circular economy leaders, reveal how they perceive and manage challenges encountered when implementing circular economy principles. Some challenges are classified as insurmountable 'tensions' while others as 'interesting' accepted as implicit in their stewardship approach. While challenges are perceived as barriers, leaders appear to have a level of acceptance for the 'interesting' challenges, whereby they improvise and 'play' with creative strategies to find innovation solutions.*

**Keywords:** Sustainability, Innovation, Environmental Issues,

**INTRODUCTION**

As tensions between rising consumption demands and resource scarcity intensify, innovative approaches to managing systems and organizations for resource productivity enhancement are increasingly significant. Advocates are calling for transitions towards a sustainable economy (Townsend 2015) and resource efficiency has become a focus for management scholars as climate change intensifies (Howard-Grenville, Buckle, Hoskins & George 2014). The circular economy is one such model that proposes a systems approach to maintain and more productively utilize material, resource and information flows to fulfill growing consumption demands (Andersen, 2007). An aspirational model, the circular economy builds on various foundation concepts, such as regenerative design (Lyle 1994), the performance economy (Stahel 2006), cradle-to-cradle (McDonough and Braungart 2002), industrial ecology (Frosch and Gallopoulos 1989), the blue economy (Pauli 2010), and bio mimicry (Benyus 1997). Conceptualizations of the circular economy encompasses a proposition for innovative systems change that occurs throughout value chains to enable an economy that is restorative by design (EU 2014; EMF 2013/2014; Webster 2014). This juxtaposes the 'real-world' linear system that is modeled on 'take, make, consume and dispose' approach, where the assumption of abundant resources generates waste.

Lead proponents estimated the economic benefits to be \$1 trillion in savings in the world economy immediately, and potentially much more in years ahead (Confino, 2014). These savings would flow

from waste reduction and lower capital requirements for businesses. By turning ‘waste into wealth’ estimates suggest \$4.5 trillion in value can be added to the economy by 2030 (Lacy and Rutqvist, 2015). In Europe, the biggest annual conference on environmental policy focused on the circular economy and how to unlock its potential (Eurosite, 2014) and the EU has developed a circular economy roadmap in early 2015 which has now been followed by the ambitious action plan adopted in 2016 (EC, 2016). China for several years has incorporated the circular economy in their national planning policy (Yuan, Bi and Moriguichi 2006; Matthews and Tan 2011) with the latest five-year plan devoting an entire chapter to efforts to “vigorously develop circular economy” (China, 2016).

While policy initiatives are occurring elsewhere, in Australia the shift to a circular economy has been producer-led with leaders adopting new business models that incorporate circular economy principles. Beyond the economic benefits just outlined, Ghisellini, Cialani & Ulgiati (2015) demonstrate how the circular economy is generative of new business models strongly connected to sustainable development and Sauv , Bernard & Sloan, (2015) note the circular economy offers a set of tools to operationalize the promise of sustainable development. Lacy and Rutqvist (2015) have identified at least five different business models to transition to a circular economy classified as circular supply chain, recovery and recycling, product life-extension, sharing platform and product as service. Each of these approaches imply businesses conceptualise their activities beyond their organization to prioritise environmental preservation or restoration of materials and energy through new arrangements with stakeholders in supply networks or by acting as stewards for materials and resources throughout the product life cycle. By prioritising environmental objectives, they may encounter tensions between the dominant ‘linear’ model and their circular business model.

Extant corporate sustainability research often adopts an instrumental framing of organizational objectives where short-term economic goals are prioritized. Known as the business case *of* sustainability (Schaltegger, L deke-Freund & Hansen 2012), tensions are not acknowledged as it is assumed economic objectives are prioritized. In these cases, decision makers may allow social and environmental objectives to be trade-offs in the pursuit of economic objectives. What objectives are prioritized, and how leaders and individuals make sense of tensions experienced when prioritizing

competing objectives is an ongoing debate in the corporate sustainability literature. There is evidence to suggest that the relationship between priorities is complex, and that even within an organization, broad diversity exists regarding how different stakeholders make sense of and manage social, environmental and economic objectives (Angus-Leppan, Benn & Young 2010).

Schaltegger et al. (2012) provide an alternate logic at the organization-level, that they define as the business case *for* sustainability. Such a model focuses on sustainable synergies attained when intentionally pursuing beneficial social and/or environmental objectives. Similar integrative sustainable business models whereby the dominant objectives are to simultaneously attain environmental, social and economic objectives have been defined as the ‘ideal organization’ (Benn, Dunphy and Griffiths 2014) or the ‘sustainable organization’ (Stubbs & Cocklin 2008). According to these approaches, sustainable enterprises are directed toward outcomes, guided by the intention to contribute to the solution of societal and environmental problems, creating a positive economic contribution through a management approach specifically directed towards this intention and purpose.

Given this context, this research explores how leaders implement circular economy principles within their business operations. How do leaders perceive and manage tensions between competing priorities when operating in a linear economy where the dominant logic is economic?

## **METHODOLOGY**

Business owners or senior managers responsible for the implementation and design of circular economy businesses practices were targeted, to draw out how these leaders operationalized core circular economy principles, through the recycling, remanufacturing, reuse or redistribution, or maintaining the longevity of material resources. In-depth interviews of approximately 60 minutes duration were undertaken with ten business owners or senior managers from a cross section of industries. An exploratory study, questions were designed to explore if and how leaders encountered and responded to tensions and challenges when implementing their circular economy business models. Interviews were recorded and transcribed verbatim, allowing the interviewer to concentrate on questioning and listening, to provide an accurate record, to enable the use of direct quotes in

subsequent analysis (as suggested by Saunders, Lewis and Thornhill 2003). Table 1 contains a list of the pseudonyms used to represent these companies, their industry sector and company size.

----- Insert Table 1 about here -----

Transcripts were analyzed using conceptual and relational content analysis. Content analysis is a research technique for breaking down text into categories based on explicit rules of coding (Krippendorff 2004). Relational analysis considers the relationships between concepts. In line with the recommendations of Gephart (2004), computer-aided textual analysis using Leximancer was used, as it adds reliability by using machine learning to automatically and entirely code the text rather than using the researcher's interpretations to do so. Therefore, the computer analysis provides an objective, quantitatively derived framework in which qualitative interpretation analysis is more effectively facilitated (Smith and Humphries 2006). The value of this kind of analytic triangulation has been highlighted in a broad range of research contexts (Patton 1990). The recommended Leximancer analysis procedure was followed (Leximancer 2005), using 'discovery' mode to see what concepts were automatically generated without intervention. A 'concept' is a set of words that are used in conjunction with each other by informants. The components of each 'concept' are placed in a 'thesaurus' that contains the set of associated words and weightings, which indicate the words' relative importance in the concept generation. Each three-sentence block of text is then assessed to ascertain whether it contains sufficient evidence of the concept and if so is so coded. Each block of text was also 'tagged' to indicate informants.

## **FINDINGS**

In Leximancer, the frequency of co-occurring concepts is measured, weighted and clustered to produce a two-dimensional map of concepts (for further details of this process see [www.leximancer.com](http://www.leximancer.com).) The discovery mode Leximancer map is an overview of the cognitive structure and content of the data. Figure 1 shows the discovery mode Leximancer map.

----- Insert Figure 1 about here -----

Themes are groupings of concepts. The theme is named according to the most frequently occurring concept within the theme. Ten theme circles are visible, the more predominant the theme, the 'hotter' the colour of the theme circle. The ten themes, in ranked order, are 'tension', 'money', 'recycled',

‘interesting’, ‘change’, ‘design’, ‘packaging’, ‘competitors’, ‘research’ and ‘paradox’. The themes are sprinkled with ‘concepts’ and speaker tags.

Concepts are collections of words that generally travel together through the text. Table 2 contains the ranked concept list. The ‘count’ refers to the number of ‘context blocks’ that are coded with each concept. The top concept, ‘tension’, is identified with 157 context blocks across the data.

---- Insert Table 2 about here ----

As shown in Table 2, the top five concepts are: ‘tension’, ‘stewardship’, ‘synergy’, ‘money’ and ‘recycling’. The thesaurus behind each concept is contained in the appendix. Adjacency on the map indicates that two concepts appear in similar conceptual contexts, meaning that the same text is often coded as both of these concepts (‘co-occurrence’) and/or they co-occur with other, similar concepts. For example, the concepts ‘recycling’ and ‘reuse’ appear very close to each other, indicating that the words that constitute them are often used together. Speaker tags are positioned in red around the map, representing the ten leaders interviewed. Proximate speaker tags indicate greater similarity of views via the similar distance they have from concepts with which they have strong associations.

### **Birdseye view of the findings**

The initial reading of the Leximancer map in Figure 1 occurs at a big picture level, considering overall placement on the map of themes and concepts. Two streams of discussion are apparent: the highly populated stream at the top half of the Leximancer map that centres on the ‘tension’ around making stewardship work in the current system, particularly around recycling, and the less populated stream on the bottom half of the map centered on ‘interesting’ and ‘paradox’. Figure 1 indicates that leaders perceive the relationship between their circular economy approach and the linear economy as either beset with issues that are a source of ‘tension’ or challenges that are considered ‘interesting’.

### **Unpacking the ‘Tension’ and ‘Interesting’ Concepts**

The meaning of a concept can be unpacked in three ways: by looking at the ranked list of thesaurus words that define and describe the concept; by looking at adjacent (ie co-occurring) concepts and themes; and by drilling down to the quotes that are coded with the concept. Firstly, we consider thesaurus of words comprising the two main concepts ‘tension’ and ‘interesting’ (see appendix 1) and

co-occurrences of themes within them. Each word in the thesaurus is weighted by relevancy, a weighting over 10 is very high. Some concepts have a thesaurus made up of many words of similar low weighting; other concepts consist of one key word of very high weighting.

Many words comprising the 'tension' concept are weighted between 4 and 7. The top ranked words: trying, problem, issue, challenge, challenges, problems, control, political, negative and cynical. These are the key words used by some interviewees, particularly when describing their experience of taking a stewardship approach in a predominantly linear economy. Additionally there is concentrated overlap between themes within the concept, for example the theme tension overlaps with five of the nine themes: 'recycled', competitors', 'packaging', 'change' and 'money', indicating that these themes are frequently spoken about in the same context as 'tension'. Detailed analysis of these overlaps can be found in Appendix 1. In summary, insights reveal that tensions are mostly experienced when implementing recycling practices, that stewardship of products and packaging is complex because responsibility for and distribution of costs and benefits between stakeholders is contested, and that traditional lines of competition and cooperation becomes blurred.

In comparison with the rich thesaurus behind the concept 'tension', the thesaurus behind the concept 'interesting' is dominated by the word 'interesting', weighted over 10 for relevancy. In other words, the concept 'interesting' is the same as the word 'interesting': it is used semantically, as in "the interesting thing is..." and "there's a really interesting piece". Normally, a semantic concept would be removed from analysis. However, in this case because it is highlighting critical aspects of the text and because it is so frequently used by speakers in the text (Table 2 shows that 'interesting' is ranked 14<sup>th</sup> out of 50 concepts and it is coded with 53 blocks of text), it has emerged as a concept worth including. The 'interesting' theme sits close to the themes 'research' and 'design', all concepts used to describe future opportunity, profits and innovation. The interesting theme overlaps slightly with the theme 'money', but sits away from the theme 'tension', suggesting that the speakers do not see these concepts as a source of tension, but as an avenue for opportunity and innovation. Noteworthy, is the proximity of the theme 'interesting' to the 'paradox' theme. A barrier or challenge viewed as 'interesting' can be perceived as one that can be kept open and 'lived with'. Circular economy leaders cope with some challenges of operating in the linear economy, by viewing them as 'interesting'.

Next we drill down to the quotes that are coded with the concepts ‘tension’ and ‘interesting’ by comparing these two central concepts across pairs of co-occurrences from the top five concepts (see Table 3, below for exemplary quotes). Drilling down into co-occurrences between concepts, enriches the contexts of the discussions of ‘tension’ and ‘interesting’.

----- Insert Table 3 about here -----

Table 3 summarises quotes coded with co-occurrence between the two key concepts ‘tension’ and ‘interesting’ and the remaining top concepts, ‘stewardship’, ‘synergy’, ‘money’ and ‘recycling’. These concepts, situated in the top half of the map in Figure 3, are perceived as the major sources of tension. In Table 3 we examine these same sources of tension as they co-occur with the concept ‘interesting’.

The exemplary quotes in Table 3 demonstrate two different perceptions of the tensions or challenges interviewees encountered. One perception is captured in the quotes in the top half of Table 3, grouped under the concept ‘tension’. These quotes talk about “tension”, “frustration”, feeling “stuck”, “political”, “really hard”, essentially reflecting pessimistic views of the problems faced. They are also largely “external issues”, “political” issues where things are stuck at “status quo”. In other words, the quotes demonstrate that where tension is perceived, it usually involves external stakeholders, and often government is associated with inertia. For example, ‘Sharers’ claim that “neither side of politics is interested in trying to surface that assumption (that we have to choose between the economy and the environment). That's where we're stuck”.

On the other hand, the quotes grouped under ‘interesting’ in the bottom half of Table 3 talk about creative solutions, breakthroughs in innovation and cooperation, essentially reflecting optimistic views of the problems faced. However, this does not mean that the opposite is true of the quotes around the concept ‘interesting’. What is ‘interesting’ to interviewees is also sometimes about barriers in the external operating environment, but the language used is “interesting”, “paradox”, “perverse”, “ironically”, “creative”, “disruptive” and “changes the game”. For both analyses, interviewees talk about what sound like intractable problems, but their perception of these problems is either that they are either insurmountable ‘tensions’ or ‘interesting’ challenges: they either feel stuck in a problem or

intrigued by the possibilities presented. For example, when ‘Nappies’ talk about their board being unsupportive of them becoming a “B Corp”<sup>1</sup>, they frame this set back as “an interesting journey”.

While both sets of challenges appear to present barriers to operating a business based on principles of circular economy, leaders express acceptance of the ‘interesting’ challenges, by finding solutions or ‘synergy’. In Table 3, sections of text coded with the co-occurrence between ‘interesting’ and ‘synergy’ demonstrate the creative innovation that results from interesting challenges. For example, in Table 3, ‘Sharers’ talks about their “postage solution”: they wanted to prioritise the environment and realised this could be achieved through making use of the idle capacity of local courier vans. But they encountered an “interesting thing” when the postal service was uninterested in the solution because they were stuck in linear thinking. They found an alternate approach by directly approaching couriers and using smart technology to enable the solution, avoiding the barrier of linear postal service system.

## DISCUSSION

Firstly we discuss two main findings about tension and interesting and secondly, how this relates to the ways leaders perceive and manage tensions to operate within the linear economy.

### **Tension vs Interesting**

*The perception that ‘tension’ is ‘not interesting’*

In contrast to the interview quotes about what is “interesting”, what is not interesting to managers are the problems that cause “tension” rather than interest. Interviewees in this study feel “stuck” and unable to make progress when faced with problems that they perceive as sources of tension.

In his seminal work, eminent sociologist Davis (1971) discusses the difference between interesting and not-interesting theories concluding that “interesting theories are those which deny certain assumptions of their audience, while non-interesting theories are those which affirm” assumptions (Davis 1971, p. 309). The ‘not-interesting’ in our findings are perceived by managers as “problems”, such as the oft-held assumption that innovation is limited in Australia because “we’ve got a small population”:

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<sup>1</sup> B Corps are for-profit companies certified by the nonprofit B Lab to meet rigorous standards of social and environmental performance, accountability, and transparency.



*Another problem with recycling in Australia is that we've got a small population whereas the Americans can go and put a recycling plant in for carpets etc. ('Designers')*

Tension is also perceived to come from pressure to make sustainability financially viable. This tension sometimes manifests as a generalized assumption. For example, 'Remanufacturers' remarks that "everyone wants to be able to recycle things for nothing". At other times, this financial pressure is associated with the perception (and assumption) that the government prioritizes the economic over environmental considerations. For example, "I lost business to competitors that were supported by the state government because they didn't budget to dispose of their glass and I did" ('Recycler1'). Furthermore, the tension is increased when there is a perceived lack of government support for sustainable businesses as voiced by 'Waste': "I'm sick of dealing with government and especially councils...they weren't prepared to share those financial benefits with the businesses that are making the change".

*The perception that challenges are interesting*

As demonstrated in exemplary quotes in the bottom half of Table 3, some interviewees expressed a perception of challenges as 'interesting'. 'Interesting' is closely linked in their minds as 'perverse' and 'ironic', making them question assumptions they had about how stakeholders would respond and thereby earning their attention (Davis 1971) and prompting managers to innovate. For example, 'Nappies' talks about how they assumed their board would approve changes in line with being a B Corp and were surprised when the board refused. They fired the board and began looking for alternative funding sources that understood their paradoxical mission expressed as:

*We are really interested in...how do you create products that...are regenerative...and the paradox is there are some massive financial rewards in innovation ('Nappies')*

Also, 'interesting' points to cases where companies overturn assumptions themselves by, for example, creating unprecedented cooperation between competitors:

*It was interesting, I was able to convince competitors, printer and copier companies who were competitors to cooperate ('Recycler2')*

Other leaders talked about "changing the game", "taking a voluntary approach" and "disrupting the model", when they were describing something as 'interesting'.

Through the lens provided by Davis (1971), these findings underpin our observation that when a circular economy leader is faced with a set back, he/she will respond differently to that set back depending on whether it is an unexpected or expected setback. When the setback is expected and reinforces assumptions, he/she feels stifled, stuck, uninspired and frustrated and views the setback or barrier as a source of tension. When problems are viewed as a source of tension and managers become “stuck”, it appears to be when they perceive an instrumental motivation where “the economic dimension is prioritized over the two other dimensions” (Hahn et al. 2015, p. 297). Problems such as Australia’s “small population” and a perceived lack of local government support stem from the instrumental view of business. There are no strategies for navigating these tensions, in the words of ‘sharer’, “that’s where we’re stuck”.

On the other hand, if a setback is unexpected, that is, it makes him/her question certain of his/her assumptions, he/she is more likely to be interested, intrigued and willing to ‘play’ and be motivated to innovate in the paradox provided by this unexpected setback. In this sense, paradox, a contradiction in terms, is unexpected, a surprise. This suggests that paradox inspires openness, creativity, playfulness and imagination. The human drive to being creative and working with what is perceived as interesting is strong as Davis (1999, p.245) comments, “the first criterion by which people judge anything they encounter, even before deciding whether it is true or false, is whether it is interesting or boring”. This idea is reflected in a comment about the drive for creativity expressed by ‘Recycler2’:

*“The driver for me is to create disruptive business models...it changes the game. It’s far too boring to be doing the same thing as everybody else and just competing on price”.*

This drive to innovate, to move forward, despite a paradox which appears to be contradictory is illustrative of the paradoxical frame (Hahn et al. 2014a). Surprising contradictions appear to provide an opportunity for new approaches to be implemented.

### **Improvisational Strategies**

Paradoxes have been understood as contradictory demands that persistently coexist as competing priorities confront decision makers while they seek to attain organizational goals (Smith 2014; Lewis 2000). One approach contextualizes paradox in the specific context of corporate sustainability where

decision makers are confronted by competing demands in the attainment of social, environmental and economic objectives (Hahn, Preuss, Pinkse and Figge 2014a). Hahn et al.'s (2014b) "acceptance" and "resolution" strategies enable us to better understand how our leaders cope with the paradoxes they encountered at the systems-level. Hahn et al. (2014b) classify tensions in relation to change that happen between "organizational and systemic levels" (Hahn et al. 2014, p.304). The tensions discussed in this study are largely related to such change, being the challenge individuals encounter when discovering innovative ways to implement circular practices at the organization-level, when the norm at the systems-level is linear. Leaders in this study performed an improvised 'juggling act' between staying legitimate and viable in the short term, while improvising with what interviewees call "disruptive business models". Specifically, we identified improvisation occurring through temporal and spatial separation strategies (Hahn et al. 2014b) as leaders sought to pursue environmental practices to enable circular material, resource and information flows, based on an assumption that this would 'pay off' economically in the near future. Additionally we found examples of synthesis strategies particularly in regard to 'interesting' paradoxes that were typically enacted by the more entrepreneurial SMEs. Finally, acceptance strategies occurred when leaders encountered 'tension' as a 'rule bound' structure at the systems-level that created inertia for their plans to implement circular principles predominantly in relation to restrictive or unsupportive regulations.

Clegg et. al. (2002) stated that understanding paradoxes requires a relational approach whereby contradictions are not resolved, yet synthesis between seemingly oppositional poles inspires leaders to improvise: to plan and enact action accommodating without resolving contradictions. This is equivalent to the enactment of a "synthesis resolution" strategy (Hahn et al. 2014b). An example of this improvised resolution strategy is where 'Logistics' tried to exert influence despite a contradiction between their environmental goals and a client's cheap packaging decisions. The shared meaning between the logistics company and their client is product quality, so the logistics company used the fact that their client's money-saving around packaging was causing "handling issues and those handling issues are causing issues to your product" to influence the client's packaging decisions. The findings show that embracing the tensions between the sustainability dimensions may not necessarily

imply inaction. In this example, an initial tension between cost and quality was resolved when a new shared meaning was established inherently accommodating the opposing poles.

Another example of this creative improvisation is evident in the way leaders sought to decouple the 'usual' value and meaning attributed to resources and re-attach it in different ways. For example, 'Sharers' sought to establish a form of social value creation in the act of giving that might compel consumers to freely share their used and under utilized material stocks to maintain and recirculate products for longer. This circular principle come into direct conflict with the linear logic of the dominant economy where materials are valued in monetary terms. Through a separation strategy, they sought to decouple materials from their economic valuation and attach a social value that could be obtained in the act of giving, rather than trading. Thereby, 'Sharers' collaborated with consumers and facilitated collaboration between consumers to dislocate the value of products from being attributed to ownership to being attributed to sharing.

Therefore resolution strategies were a source for innovating stakeholder relationships and 'collaborating radically' to re-shape the meaning of value creation by re-aligning priorities away from a purely economic focus. Leaders took unusual risks and confronted potential conflicts when seeking this objective realignment. For example when 'Sharers' found the courier company would not allow the utilization of idle capacity that was essential for the synergistic attainment of ecological and economic objectives, they went directly to the drivers to establish the reverse-logistics practice. When 'Nappies' could not accommodate the social wellbeing of their employees with the economic demands of their board and investors, they recreated their funding model through a form of 'crowd sourcing' and reinvented their governance structure. An exploratory improvisational approach, where leaders look for synergies, but also seek to actively shape the 'rule-bound structures' where they encounter tensions through innovative relationships and creating new shared meaning complements the paradoxical leadership behavior work of Zhang, Waldman, Han and Li (2014). Adopting a 'Yin and Yang' philosophy, leaders can approach systematic paradoxes holistically to view what may seem like competing demands as complementary and interdependent parts of a holistic and larger system.

Our research discovered that leaders opportunistically implement circular economy principles in their

business models and improvise when encountering ‘interesting’ paradoxes may be of use to other practitioners seeking transition to a circular economy.

An emergent theme in this research is how circular economy leaders develop practices that could be categorized as improvisational through synthesis and separation strategies when interacting with stakeholders. Clegg, Cuhna and Cuhna (2002) outlined how all organizational forms are bound in paradox between rule bound structures and the creative independent structuring of human actors.

Rather than avoiding tensions and contradictions between competing objectives, individuals engage in ongoing improvisation as they enact their organizing activities. Improvisation through ‘integration techniques’ enables innovative practices to emerge whereby establishing common ground between seemingly competing objectives enables synergy (Andriopoulos & Lewis 2010).

## REFERENCES

- Andersen, M.S. (2007). An Introductory Note on the Environmental Economics of the Circular Economy. *Sustainability Science* 2(1), 133-140.
- Andriopoulos, C., and Lewis, M. W. (2010). Managing innovation paradoxes: ambidexterity lessons from leading product design companies. *Long Range Planning* 43(1), 104-122.
- Angus-Leppan, T., Benn, S.H. and Young, L.C. (2010). A sensemaking approach to trade-offs and synergies between human and ecological elements of corporate sustainability. *Business Strategy and the Environment* 19(4), 230-244.
- Bartunek, J.M., Rynes, S.L. and Ireland, R.D. (2006). What makes management research interesting, and why does it matter?. *Academy of Management* 49(1), 9-15.
- Benn, S., Dunphy, D., and Griffiths, A. (2014). *Organizational change for corporate sustainability*. Routledge.
- Benyus, J. M. (1997). *Biomimicry*. New York: William Morrow.
- Clegg, S. R., Cuhna, J. V., & Cuhna, M. P. (2002). Management paradoxes: A relational view. *Human Relations* 55 (pp. 483–503).
- Davis, M.S. (1971). That's Interesting: Towards a Phenomenology of Sociology and a Sociology of Phenomenology. *Philosophy of the Social Sciences* 1(4), 309-344.
- Davis, M. S. (1999). Aphorisms and cliches: The generation and dissipation of conceptual charisma. In J. Hagan & K. Cook (Eds.), *Annual review of sociology*, 25 (pp. 245–269). Palo Alto, CA: Annual Reviews.
- EMF (2013). *Towards the Circular Economy: Economic and business rationale for an accelerated transition*, Seacourt. The Ellen McArthur Foundation.
- EMF (2014). *Towards the Circular Economy: Accelerating the scale-up across global supply chains*. The Ellen McArthur Foundation.
- EU (2014). *Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the committee of the regions. Towards a circular economy: A zero waste programme for Europe*. Available at: [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014DC0398R\(01\)](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014DC0398R(01)) (last accessed 23<sup>rd</sup> November, 2015)
- Frosch, R. A., & Gallopoulos, N. E. (1989). Strategies for manufacturing. *Scientific American*, 261(3), 144-152.
- Gephart RP. (2004). From the editors: qualitative research and the Academy of Management Journal. *Academy of Management Journal* 47(4), 454–462.
- Hahn, T., Preuss, L., Pinkse, J., and Figge, F. (2014a). Cognitive Frames in Corporate Sustainability: Managerial Sensemaking with Paradoxical and Business Case Frames. *Academy of Management Review* 39(4), 463-487.
- Hahn, T., Pinkse, J., Preuss, L., and Figge, F. (2014b). Tensions in corporate sustainability: Towards an integrative framework. *Journal of Business Ethics* 127(2), 297-316.

- Howard-Grenville, J., Buckle, S. J., Hoskins, B. J., and George, G. (2014). Climate change and management. *Academy of Management Journal* 57(3), 615-623.
- Krippendorff K. (2004). *Content Analysis: an Introduction to its Methodology*, 2nd edn. Sage: Thousand Oaks, CA.
- Leximancer. (2005). *Leximancer Manual Version 2.2*. [http://www.leximancer.com/documents/Leximancer2\\_Manual.pdf](http://www.leximancer.com/documents/Leximancer2_Manual.pdf) [6 June 2008].
- Lewis, M. W. (2000). Exploring paradox: Toward a more comprehensive guide. *Academy of Management Review* 25(4), 760-776.
- Lyle (1994). *Regenerative Design for Sustainable Development*, John Wiley & Sons.
- Mathews, J. A., & Tan, H. (2011). Progress toward a circular economy in China. *Journal of Industrial Ecology* 15(3), 435-457.
- McDonough, W. & Braungart, M. (2002). *Cradle to Cradle: Remaking the Way we Make Things*, NY: North Point Press.
- Patton MQ. (1990). *Qualitative Evaluation and Research Methods*. Sage: Newbury Park, CA.
- Pauli, G. A. (2010). *The blue economy: 10 years, 100 innovations, 100 million jobs*. Paradigm Publications.
- Saunders M, Lewis P, Thornhill A. (2003). *Research Methods for Business Students*, 3rd edn. Prentice-Hall: London.
- Schaltegger, S., Lüdeke-Freund, F., and Hansen, E. G. (2012). Business cases for sustainability: the role of business model innovation for corporate sustainability. *International Journal of Innovation and Sustainable Development* 6(2), 95-119.
- Smith, W. (2014). Dynamic decision making: A model of senior leaders managing strategic paradoxes. *Academy of Management Journal* 57(6), 1592-1623.
- Smith, W. K., Binns, A. and Tushman, M.L. (2010) Complex business models: Managing strategic paradoxes simultaneously, *Long Range Planning* 43(2), 448-461.
- Smith A, Humphries M. (2006). Evaluation of unsupervised semantic mapping of natural language with Leximancer concept mapping. *Behavior Research Methods* 38(2), 262–279.
- Smith, W. K., and Lewis, M. W. (2011). Toward a theory of paradox: A dynamic equilibrium model of organizing. *Academy of Management Review* 36(2), 381-403.
- Stahel W.R. (2006). *The Performance Economy*, Palgrave Macmillan, London.
- Stubbs, W. and Cocklin, C. (2008). Conceptualizing a ‘sustainability business model’, *Organization & Environment* 21(2), 103–127.
- Townsend, M. (2015). Editorial: Sustainable Economy Special Edition. *Building Sustainable Legacies: The New Frontier Of Societal Value Co-Creation* 2015(5), 5-8.
- Webster, K. (2013). What Might We Say about a Circular Economy? Some Temptations to Avoid if Possible. *World Futures* 69(7-8), 542-554.
- Yuan, Z., Bi, J., and Moriguichi, Y. (2006). The circular economy: A new development strategy in China. *Journal of Industrial Ecology* 10(1-2), 4-8.

Zhang, Y., Waldman, D., Han, Y., & Li, X. (2014). Paradoxical leader behavior in people management: Antecedents and consequences. *Academy of Management Journal* 58(2), 538-566.



**APPENDIX 1**

Thesaurus of top ranked words comprising key concepts, including relevancy weightings

| Concept  | Tension  | Synergy   | Interesting       | Money       | Recycling       | Stewardship   |
|--|--|---|-------------------|-------------|-----------------|---|
| <b>Top words in Thesaurus including relevancy weightings</b> | Trying 7.04<br>Problem 6.89<br>Issue 6.14<br>Challenge 5.81<br>Challenges 5.81<br>Problems 5.63<br>Control 5.56<br>Political 5.41<br>Negative 5.14<br>Cynical 4.38 | Value 6.6<br>Opportunity 5.96<br>Improve 5.91<br>Fair 5.86<br>Everyone 5.8<br>Positive 5.74<br>Sharing 5.68<br>Similar 5.68 | Interesting 10.32 | Money 10.12 | Recycling 11.03 | Product 5.6<br>Stewardship 4.79<br>Voluntary 4.67<br>Aggregate 4.06<br>Drivers 4.06<br>Frame 4.06<br>Recovered 4.06 |

The theme tension overlaps with five of the nine themes: ‘recycled’, ‘competitors’, ‘packaging’, ‘change’ and ‘money’, indicating that these themes are frequently spoken about in the same context as ‘tension’. Insight comes from looking at concepts that appear in the overlap between themes and these insights.

The overlap containing the most concepts is the overlap between ‘tension’ and ‘recycled’. Concepts in this overlap include ‘stewardship’, ‘reduce’, ‘performance’, ‘environment’, ‘remanufacturing’, ‘recovery’, ‘process’, ‘materials’ and ‘plastic’. This indicates that interviewees experience these aspects of recycling as a source of tension, particularly the interviewees called ‘Remanufacturers’ and ‘Recycler2’ because their tags sit closest to this overlap. For example, ‘remanufacturer’ talks about the problems with recycling leaded glass:

*With all of the TVs coming back there’s a whole lot of leaded glass that’s coming back and we haven’t got the capability of processing it in Australia and it generally gets exported overseas and that’s very problematic because getting those export licenses is difficult.*

Moving to the highest point on the map, the concept ‘responsibility’ sits in the overlap between ‘competitors’ and ‘tension’. Though unsurprising, this is an interesting finding because the circular economy relies on competitors working together to take responsibility for their social and

environmental impact. The top words in the thesaurus for ‘responsibility’ are ‘responsibility’, ‘everybody’s’ and ‘absolve’. This is born out when drilling down to the text coded as ‘responsibility’. For example, ‘Recycler2’ talks about producer responsibility: “what we’re waiting for...is for the battery manufacturers to accept responsibility to pay for the...life cycle management”.

Moving anti-clockwise on the map, the next overlap is between the themes ‘packaging’ and ‘tension’ and within this overlap the concepts ‘government’ and ‘cost’ appear, suggesting the regulatory environment for packaging and cost are experienced as a source of tension by some interviewees. For example, ‘Logistics’ talks about the problems with processing used polystyrene packaging rather than sending it to landfill:

*you hear stories of people collecting polystyrene because they can melt it down and send it overseas and make money... My cost analysis doesn't show that we can make money on the process... I don't understand how other people are achieving a positive return so I'm a bit frustrated about that.*

Also unsurprising, the next theme ‘change’ overlaps with ‘tension’. Change also overlaps with the theme ‘money’ and within the overlap are the concepts ‘share’ and ‘money’, suggesting tension around money and sharing. For example, ‘Waste’ talks about their frustration with government organizations taking credit for change projects but not sharing the financial benefits with other organizations involved.

The final overlap between the themes ‘tension’ and ‘money’ contains the concepts ‘tension’, ‘synergy’ and ‘resource’. Looking at the thesaurus contained in the appendix, the concept ‘synergy’ is associated with words like ‘value’, ‘opportunity’, ‘improve’, ‘positive’ and ‘sharing’. This thematic overlap suggests that there are both synergies and tensions to be found in resourcing the circular economy. Some examples in the text show where these synergies and tensions co-exist. For example, ‘remanufacturer’ talks about being “on the board” of a not-for-profit, e-waste recycling platform that is a “fierce competitor” under “product stewardship legislation”.

## **TABLES**

**Table 1 – Ranked Interviewee (‘SPEAKER’) List**

| Company Pseudonym           | Company type | Industry sector                  |
|-----------------------------|--------------|----------------------------------|
| SPEAKER: makers             | SME          | Digital fabrication and design   |
| SPEAKER: waste              | SME          | Waste management                 |
| SPEAKER: nappies            | SME          | Childrens wear clothing industry |
| SPEAKER: sharers            | SME          | Redistribution                   |
| SPEAKER: recycler1          | MNC          | Metals and electronics recycling |
| SPEAKER: <i>logistics</i>   | MNC          | Logistics                        |
| SPEAKER: designers          | SME          | Textiles                         |
| SPEAKER: dairy              | SME          | Dairy food                       |
| SPEAKER: recycler2          | SME          | Waste management                 |
| SPEAKER:<br>remanufacturers | MNC          | Document management services     |

**Table 2 - Ranked Concept List**

| <b>Ranked Concepts</b> | <b>Count</b> |
|------------------------|--------------|
| tension                | 157          |
| stewardship            | 115          |
| synergy                | 109          |
| money                  | 81           |
| recycling              | 73           |
| industry               | 67           |
| process                | 62           |
| resource               | 59           |
| cost                   | 59           |
| government             | 58           |
| environment            | 56           |
| recycled               | 56           |
| whole                  | 56           |
| interesting            | 53           |
| change                 | 51           |
| landfill               | 50           |
| materials              | 49           |
| design                 | 47           |
| sustainability         | 44           |
| business model         | 40           |
| plastic                | 38           |
| toner                  | 32           |
| energy                 | 30           |
| community              | 22           |
| return                 | 19           |
| packaging              | 19           |
| reuse                  | 17           |
| issues                 | 17           |
| responsibility         | 17           |
| share                  | 17           |

|                 |    |
|-----------------|----|
| competitors     | 17 |
| benefit         | 16 |
| consumption     | 16 |
| system          | 16 |
| circular        | 16 |
| recovery        | 14 |
| profit          | 14 |
| sense           | 14 |
| performance     | 14 |
| demand          | 14 |
| reduce          | 13 |
| remanufacturing | 12 |
| production      | 12 |
| relationship    | 11 |
| research        | 10 |
| problems        | 8  |
| safety          | 8  |
| procurement     | 8  |
| decisions       | 6  |
| paradox         | 1  |

**Table 3: Exemplary Quotes Reflecting How Leaders in the Circular Economy Experience “Tension” and “Interesting” within their Organizational Goals**

| Concepts       | Stewardship   | Synergy  | Money   | Recycling  |
|----------------|---|--|---|--|
| <b>Tension</b> | <p>“Neither side of politics is interested in trying to surface that assumption. That’s where we’re stuck”. (‘Sharers’)</p> <p>“The day that our global CEO decided to close our business in the UK was the day that government in the UK sent somebody to jail for the first time for illegally exporting e-waste, but it was all too late”. (‘Recycler1’)</p> | <p>“There’s going to have to be a negative to create a positive. There will have to be a brand or two or three that get dragged through the coals by the ABC or Channel 7 before we see anything change”. (‘Recycler1’)</p> <p>“How do we actually make it a positive return rather than just a little cost...I don’t understand how other people are achieving a positive return so I’m a bit frustrated about that”. (‘Logistics’)</p> <p>“I’m on (their) board (but) we compete with each other under the product stewardship legislation”. (‘Remanufacturers’)</p> | <p>“We’ve got a whole section on renewable energy in Sydney...I know this project is cash flow positive... but it’s just feeling confident and making sure my bankers are comfortable with it”. (‘Dairy’)</p> <p>“When you sit around the table with a lot of conventional business people the last thing...they ever want to touch is the status quo because right now it’s working so good for them”. (‘Nappies’)</p> <p>“The key issue is that everyone wants to be able to recycle things for nothing”. (‘Remanufacturers’)</p> <p>“If I can’t be for profit I can’t attract investment... (but) councils only want to work with you if you’re not for profit”. (‘Sharers’)</p> | <p>“Another problem with recycling in Australia is that we’ve got a small population whereas the Americans can go and put a recycling plant in for carpets etc”. (‘Designers’)</p> <p>“I’d love to be able to send my metal to a local smelter...but the volume of metal that comes from our machine recycling is too high so it goes overseas”. (‘Remanufacturers’)</p> <p>“Weak enforcement of rules and regulations around the processing of waste... that’s probably one of the biggest issues of the business and it’s an external issue that we need to work really hard on. It’s not an internal issue that we can control...there’s days I don’t want to do this, it’s really difficult. It’s very political”. (‘Recycler1’)</p> |

|                           |   |   |  |  |
|---------------------------|---|---|--|--|
| <p><b>Interesting</b></p> | <p>“What we find interesting is it’s a bit perverse because... they buy two of everything and they keep one fresh”. (‘Nappies’)</p> <p>“The standards are interesting. You’re never going to have every industry clean”. (‘Recycler1’)</p> <p>“It’s been an interesting journey for us...I went to the board and said, we’re a B Corp can you just please approve so I can get our Articles of Incorporation changed and they’re like, no”. (‘Nappies’)</p> <p>“There’s now a government mandated measuring scheme, and so it will be interesting to see if that 96% goes up or down based on the government’s new requirements”. (‘Logistics’)</p> | <p>“The maker community... is not competitive whatsoever. It’s about the community that’s in the space. It’s very much about sharing that information...a joint effort I think. We’ve had a lot of interest from manufacturing companies... Australia has a really great opportunity here”. (‘Makers’)</p> <p>“It was interesting because I was able to convince competitors, printer and copier companies who were competitors to cooperate... and share the logistics cost”. (‘Recycler2’)</p> <p>“Where it truly becomes shared is if they’re funded cooperatively or if they’re funded in a shared way, that’s interesting”. (‘Nappies’)</p> <p>“The interesting thing about our postage solution is that it also started to solve that problem which is it immediately could build a marketplace for Australia”. (‘Sharers’)</p> | <p>“Well here’s the interesting thing, we’ve built a business that is by its nature the more profit we make, the more non-renewable resources we’ve diverted from landfill”. (‘Recycler2’)</p> <p>“We are really interested in...how do you create products that..are regenerative...and the paradox is there are some massive financial rewards in innovation”. (‘Nappies’)</p> <p>“And I suppose it is an interesting one, is talking about the use of compost. Ideally we have a view that compost we discount as financial value”. (‘Waste’)</p> | <p>“There’s some very interesting renewable and natural fibre types and ironically those are... some of the bestselling products”. (‘Designers’)</p> <p>“The driver for me is to create disruptive business models...it changes the game. It’s far too boring to be doing the same thing that everybody else is doing and just competing on price. We are now looking at diversifying into all sorts of other interesting things”. (‘Recycler2’)</p> |
|---------------------------|---|---|--|--|

**FIGURES**

**Figure 1 – Leximancer Map of Interview Transcripts**



The Leximancer map in Figure 1 is set at default theme size 33%.