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Unpacking the circular economy: A problematizing review

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Abstract

Transitioning to a circular economy (CE) model has been proposed to solve many grand environmental challenges. While research on CE has been extensively reviewed, less is known about the implicit underlying assumptions of this work. Understanding these assumptions is critical as they typically go unchallenged yet play a significant role in shaping research fields. In this paper we conduct a problematizing review to critically analyse and make explicit the in-house, root metaphor and ideological assumptions that inform the framing of CE. Firstly, we demonstrate various *in-house assumptions* about CE, such as an emphasis on the business case for CE and the relationship between CE and corporate sustainability. Secondly, *root metaphor assumptions* include circularity and industrial relationships resembling biological metabolisms. Finally, the dominant *ideological assumptions*-neoliberalism and ecological modernization-guide scholarly thinking about growth, consumption and profit maximization. Based on our analysis and drawing on the ongoing CE debates within broader environmental studies, we suggest new agendas for future research. We contribute to the growing literature on CE in business, management and organization studies by identifying assumptions that may be misleading or limiting for future CE research, as well as to the conversations on grand challenges by discussing the implications of how challenges and solutions are framed.

INTRODUCTION

Recent business, management and organization (BMO) research has highlighted the importance of tackling grand challenges (Howard-Grenville et al., 2019). At the same time, transitioning to a circular economy (CE) is being increasingly advocated as a way of solving many grand challenges (Rodriguez-Anton et al., 2019), including natural habitat loss, waste from unsustainable production and consumption, and their implications for life on land and water (Ripple et al., 2017). The vast range of these complex challenges has translated into an extensive and interdisciplinary literature on CE, which has attracted much scholarly attention and several reviews in areas such as CE business models (Centobelli et al., 2020; Lüdeke-Freund et al., 2018; Pieroni et al., 2019) and the implementation of CE at different levels (micro, meso and macro) (Ghisellini et al., 2016) (see Table 1).

However, most of these reviews lack a deeper reflection on the fundamental assumptions regarding CE. For instance, CE research has recently been criticized for its assumptions of continued economic growth and for its overemphasis on the circle metaphor (Corvellec et al., 2021). We note that literature reviews shape their fields by

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TABLE 1 Previous literature reviews about CE

Author(s)	Theoretical background	Approach; contribution type	Conceptualization of CE
Awan et al. (2022)	CE, Industry 4.0	Systematic	New economic system
Calisto Friant et al. (2020)	CE	Integrative; critical review and typology	Holistic vision, societal system, a bundle of strategies
Centobelli et al. (2020)	CE, business models	Systematic; state of the research and future research directions	Bundle of strategies, a path for regeneration
Chen et al. (2020)	CE, business models	Integrative; theoretical framework and typology	A mechanism for maintaining material values, a system for eliminating waste, a path for regeneration
Corvellec et al. (2021)	CE, business models	Integrative, critical review	Concrete and limited solutions to specific problems, societal system
Farooque et al. (2019)	CE supply chains	Systematic; state of the research and future research directions	System for eliminating waste
Ferasso et al. (2019)	CE, business models	Semi-systematic; analysis of key terms, identification of emerging topics	System for eliminating waste
Geisendorf and Pietrulla (2018)	Review of CE and similar concepts	Integrative; comparison of concepts, a revised definition	A mechanism for maintaining material values
Geissdoerfer et al. (2017)	Sustainability and CE relationship	Integrative; state of the research; analysis of relationships between concepts	Bundle of strategies, a path for regeneration
Ghisellini et al. (2016)	Circular economy, decoupling	Semi-systematic; state of the research and historical overview; comparison of empirical evidence	Strategy for decoupling economic growth from natural resource use
Govindan and Hasanagic (2018)	CE	Systematic review; identification of drivers, barriers and practices	Strategy for decoupling economic growth from natural resource use
Hofmann (2019)	CE, business models	Systematic review; critical analysis	Strategy for decoupling economic growth from natural resource use
Jones and Wynn (2019)	Hospitality management; resilience; natural capital	Integrative, exploratory review; conceptual model	Path for regeneration, a mechanism for maintaining material values
Kirchherr et al. (2017)	CE	Semi-systematic; analysis of definitions	A new economic system, sustainability panacea
Lewandowski (2016)	CE, business models	Integrative, theoretical framework	Bundle of strategies
Lieder and Rashid (2016)	CE	Semi-systematic; state of the research, conceptual framework	Path for regeneration

(Continues)

TABLE 1 (Continued)

Author(s)	Theoretical background	Approach; contribution type	Conceptualization of CE
Lüdeke-Freund et al. (2018)	CE, business models	Integrative; typology	Bundle of strategies, a path for regeneration
Merli et al. (2018)	CE	Systematic; analysis of definitions	Umbrella for various sustainability concepts
Morales and Sossa (2020)	Trends and policy frameworks of CE	Systematic; comparison of concepts, research trends, and barriers	A mechanism for maintaining material values
Morseletto (2020)	CE	Integrative; critical examination of concepts	Path for regeneration
Murray et al. (2017)	CE	Integrative, historical and critical review	A new economic system, sustainability panacea
Prieto-Sandoval et al. (2018a)	CE, eco-innovation	Systematic review; knowledge map; analysis of concepts	New economic system
Reike et al. (2018)	CE	Integrative; critical review of CE; proposal for a new term resource value retention option (RO) and typology of 10 ROs	Strategy for decoupling economic growth from natural resource use
Schroeder et al. (2018)	CE, SDGs	Integrative; analysis of relationships between concepts	Bundle of strategies
Shao et al. (2020)	Sustainable consumption	Systematic; identification of research themes; future research directions	Umbrella for various sustainability concepts
Suzanne et al. (2020)	Production planning; CE	Semi-systematic; state of the research; future research directions	A new economic system, sustainability panacea
Van Engeland et al. (2020)	Reverse logistics, waste management	Integrative; review and integration of separate pieces of literature	A mechanism for maintaining material values
Wastling et al. (2018)	CE, design	Integrative; theoretical framework	Path for regeneration

playing a performative role, simultaneously representing and synthesizing existing research and intervening in the field's research agenda (Gond et al., 2020). Therefore, the lack of attention to the fundamental assumptions of CE is a critical omission when reviewing CE and its implications.

Authors conducting literature reviews typically internalize the assumptions inherent to a field while attempting to provide an objective view of the state of research in that field (Gond et al., 2020). Like activists, they vocalize these assumptions as they frame phenomena through academic publications. However, the underlying assumptions in these academic publications are rarely made explicit or evaluated in literature reviews (Merli et al., 2018). As a result, popular, overexploited scientific concepts become hegemonic, ambiguous and big concepts (hembigs) with unclear boundaries (Alvesson & Blom, 2021). CE is one such concept: it still lacks conceptual clarity (Blomsma & Brennan, 2017; Korhonen et al., 2018b; Lazarevic & Valve, 2020), even though it has been the subject of several reviews. It is vital, therefore, that we lay bare and scrutinize these assumptions so as to avoid conceptual hegemony and the risk of CE remaining a short-lived business buzzword.

This paper aims to identify and analyse BMO scholars' CE assumptions through a problematizing review (Alvesson & Sandberg, 2020). To do so, we draw on the literature on assumptions and problematization (Alvesson & Sandberg, 2011; Sandberg & Alvesson, 2010). Specifically, we focus on BMO scholars' in-house, root metaphor and ideological assumptions in CE research. We find that they often motivate other scholars and stakeholders through the in-house assumption that CE would create a business case. Regarding the root metaphor assumptions, BMO scholars' prognosis for future CE is grounded in the idea of a circle and industrial relationships resembling biological metabolisms. Finally, we identify neoliberalism and ecological modernization as the dominant ideological assumptions. We explain that these assumptions sometimes restrict BMO scholars and lead them to promote solutions usually within the market paradigm and through technological advancements. We then discuss alternative assumptions that can guide our conceptualizations by drawing on broader environmental studies and ecological economics literature on CE and provide solutions to what we identified in BMO scholars' limited or restricting beliefs.

We contribute to the literature in three ways. Firstly, we problematize the assumptions embedded in BMO scholars' CE conceptualizations and propose three research agendas by (1) emphasizing the limitations of CE models within business, (2) broadening the perception of agency in CE and (3) exploring more radical futures for CE. Beyond this, we demonstrate how CE might risk becoming a hembig that lacks conceptual clarity. Thus, we contribute to the growing literature on CE within BMO studies. Secondly, we demonstrate how Alvesson and Sandberg's (2020) problematizing review could be operationalized by focusing on in-house, root metaphor and ideology assumptions. By doing so, we also contribute to solidifying this review approach. Thirdly, in line with other scholars, we posit CE as a solution to grand challenges and draw attention to the growing conversation around grand challenges. We explain how the ways we diagnose these grand challenges motivate their solutions and the ways we propose future alternatives for these grand challenges are shaped by various implicit assumptions. Thus, we contribute to the literature on grand challenges.

The remainder of this paper is structured as follows. First, we give a brief background overview of CE research, focusing on previous literature reviews on CE, and introduce our theoretical concepts related to assumptions and framing. Then, we detail the methodological stages of the problematizing review process. Next, we explore the assumptions and insights embedded in BMO scholars' CE framing. We then problematize these assumptions and suggest three new agendas for future research by drawing on CE research from outside the BMO domain. Finally, we conclude by summarizing the implications and contributions of this review.

BACKGROUND

Circular economy

Joining others (Corvellec et al., 2021; Sauvé et al., 2016), we argue that the current linear economic model, characterized by wasteful resource use, is the root cause of many of today's grand environmental challenges. These include natural habitat loss, resource scarcity, waste from unsustainable production and consumption patterns, plastic in oceans and health concerns due to increasing amounts of waste (Duarte, 2014; Ripple et al., 2017). With these intersecting problems spreading throughout the world via global supply chains, the linear economy (LE) can be considered a 'societal grand challenge', defined by Brammer et al. (2019, p. 526) as global issues affecting large populations across multiple countries and regions.

A common solution proposed for averting the catastrophic consequences of linear production and consumption is to transition to a circular economy (CE): 'an economic system that is based on business models which replace the "end-of-life" concept with reducing, alternately reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies and consumers), meso level (eco-industrial parks) and macro

level (city, region, national and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations' (Kirchherr et al., 2017, pp. 224–225).

The rapid rise of CE research is reflected in the number of recent review studies, a selection of which we list in Table 1, alongside the focus areas and conceptualizations of CE in each review. Some of the early studies in the field (Geissdoerfer et al., 2017; Murray et al., 2017) were concentrated on conceptualizing CE and distinguishing it from other related concepts like sustainability, while more recent reviews have focused on particular thematic areas, such as CE business models (Centobelli et al., 2020; Lüdeke-Freund et al., 2018), circular supply chains (Farooque et al., 2019), digital technologies in CE (Awan et al., 2022) and geographical analyses of CE activity (Morales & Sossa, 2020; Shao, 2019).

We identified several reoccurring conceptualizations of CE in the extant reviews. Firstly, some reviews conceptualized CE as an economic system (Kirchherr et al., 2017; Murray et al., 2017), as a system for eliminating waste (Farooque et al., 2019; Ferasso et al., 2019) or as a holistic vision that aims to change society as a whole (Calisto Friant et al., 2020). Others saw CE in more limited terms, for example, as a bundle of strategies (Centobelli et al., 2020; Geissdoerfer et al., 2017) or as a concrete and limited solution to specific problems (Corvellec et al., 2021). Other definitions of CE hinted at more abstract aims: CE was conceptualized as a strategy for decoupling economic growth from natural resource use (Ghisellini et al., 2016; Govindan & Hasanagic, 2018), a mechanism for maintaining material values (Chen et al., 2020; Morales & Sossa, 2020) or a path to regeneration (Lüdeke-Freund et al., 2018; Wastling et al., 2018).

Despite the wealth of attention paid to the topic, there is a surprising scarcity of critical work on CE in the BMO field, aside from several notable articles that have critiqued the concept based on its lack of clarity, ignorance of its limitations and its presumed qualities as a panacea (Corvellec et al., 2021; Hofmann, 2019; Korhonen et al., 2018b). In short, it appears that CE is becoming a hembig, that is, 'a scientific concept characterized by its broad scope and ambiguous meanings, which at the same time, and somewhat paradoxically, through its dominance crowds out other less fashionable concepts or prevents the development of a more precise terminology' (Alvesson & Sandberg, 2020, p. 3).

On a broader level, these reviews reveal important issues regarding CE research in the BMO field. There is a general 'definitional ambiguity' about CE, which has become an umbrella concept used to define various circular processes that may help slow or close material production and consumption cycles (Murray et al., 2017). Many scholars have chosen to rely on think tanks such as the Ellen MacArthur Foundation or public institutions such as the European Union or United Nations to conceptualize CE rather than using academic sources or suggesting alternatives. There are disparities regarding the level of focus in CE research. While the trend is to conceptualize CE as an (economic) system, it has also been conceptualized through business-level activity. We also identified a distinct lack of reviews attempting to uncover and problematize scholars' deeper underlying CE assumptions. We believe this is problematic. As CE is often presented as a grand vision for a more sustainable future for humanity and the planet, it is surely necessary to understand the assumptions that guide scholars' thinking about CE and their framing of CE when socially constructing this grand vision. Our focus in this review is therefore on identifying and problematizing these deeper assumptions behind CE research within BMO.

Assumptions and framing

Our problematization is in two areas: assumptions and framing. We focused our analysis of CE in existing literature reviews on three sets of assumptions:[1] *in-house*, *root metaphor* and *ideology* (Table 1). *In-house assumptions* 'exist within a particular school of thought in the sense that they are shared and accepted as unproblematic by its advocates' (Alvesson & Sandberg, 2011, p. 254). For instance, we found that certain business concepts, such as strategy, and underlying notions of efficiency and business case were shared across many conceptualizations of CE. *Root metaphor assumptions* are those 'associated with broader images of a particular subject matter' (Alvesson & Sandberg, 2011, p. 255). For instance, metaphors comparing organizations to ecosystems or other natural phenomena are common in management research (Ritala & Almpanopoulou, 2017). *Ideology assumptions* include 'various political, moral-, and gender-related assumptions held about the subject matter' (Alvesson & Sandberg, 2011, p. 255). For example, management research, even when focused on sustainability issues, is underpinned by capitalist ideals (Ergene et al., 2020). Similarly, the CE conceptualizations identified in Table 1 include ideals of maintaining a growth-oriented economic system through

[1] We are aware that there are also other assumptions, such as field and paradigm. However, we decided to exclude these from our analysis since tackling field assumptions in the CE context would require evaluating the whole CE literature, including economics, engineering and BMO. Our objective is to specifically focus on BMO scholars' framing of CE. Similarly, epistemological and ontological paradigm assumptions, while important, are beyond our scope.

concepts such as decoupling and focusing on material values in CE.

Our review process is guided not only by assumptions but also by theories of framing, as analysing frames helps us understand how texts can exert the power of a field (Entman, 1993). Framing 'involve[s] the ways in which individuals use language or other symbolic gestures in context either to reinforce existing interpretive frames or to call new frames into being' (Cornelissen & Werner, 2014, pp. 18–19). Entman (1993, p. 55) argues that 'framing essentially involves selection and salience' since 'to frame is to select some aspects of perceived reality and make them more salient in the communicating text… to promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation for the item described'. Therefore, while there are different types of framing (e.g., discursive, emotional and metaphorical), any framing has three core tasks: diagnostic, prognostic and motivational. Diagnostic framing involves identifying an issue in social life that requires change, aiming to explain why a problem exists, who or what is to blame for this issue and whether it should be perceived as good or bad (Benford & Snow, 2000; Hervieux & Voltan, 2016; Kwon et al., 2014). Motivational framing 'provides a call to arms or rationale for engaging in ameliorative collective action, including the construction of appropriate vocabularies of motive' (Benford & Snow, 2000, p. 617). Finally, prognostic framing 'involves the articulation of a proposed solution to the problem' (Benford & Snow, 2000, p. 616) and 'identification of strategies, tactics and targets—that is, how the solution should be implemented' (Hervieux & Voltan, 2016, p. 284).

In this paper, we shed light on how BMO scholars' CE-related assumptions guide their diagnostic, motivational and prognostic framing of CE by following the problematizing review approach.

METHODS

Problematizing review

This paper aims to identify and analyse BMO scholars' CE assumptions through a problematizing review. As opposed to other review methodologies (e.g., integrative, systematic and narrative) that may exacerbate a field's inherent assumptions, a problematizing review tries instead to make these assumptions explicit. Problematizing reviews take the stance that scholars are not neutral when framing concepts such as CE and that their assumptions, therefore, need further scrutiny. As this methodology fits in with our research objectives, we thus decided to conduct a problematizing review (Alvesson & Sandberg, 2020).

We followed four key principles of problematizing reviews (Alvesson & Sandberg, 2020): reflexivity, reading more broadly but selectively, not accumulating but problematizing and less is more. The reflexivity principle requires actively avoiding the reproduction of taken-for-granted assumptions in the review (Alvesson et al., 2008). Reading more broadly but selectively requires a careful screening process that allows a limited number of influential articles in the review pool while also introducing articles to study the same phenomena in different fields, contexts or sub-domains. Researchers should consider broader texts, 'either in the immediate neighbourhood of the targeted domain or more broadly relevant for the perspectivation of the review domain' (Alvesson & Sandberg, 2020, p. 9). The principle of not accumulating but problematizing underlines that 'rather than undertaking a surface reading of a large volume of available studies, a deep reading of the foundational texts, and of a moderate number of representative texts of a field, enables the author to better identify, articulate and challenge problematic, taken-for-granted assumptions in a specific domain' (Alvesson & Sandberg, 2020, pp. 10–11). Finally, the less is more principle challenges the assumption that a review should evaluate all articles published within a field. Instead, it proposes that high-quality studies that reflect broad and pluralistic views should be reviewed (Alvesson & Sandberg, 2020).

Review process

Our review process follows the abovementioned principles and has two stages (see Figure 1). The first stage is associated with the less is more and not accumulating but problematizing principles. The aim here is to identify a narrow sample of articles on CE within BMO research and review these with a deeper focus in order to shed light on implicit assumptions. The second stage is associated with the reading more broadly and reflexivity principles. This stage aims to identify CE articles within the broader fields of environmental studies and ecological economics. In this way, we consider texts outside the BMO domain, which helps us problematize the assumptions identified in the first stage and offer alternatives reflexively by actively avoiding the taken-for-granted beliefs in the narrower sample of articles we reviewed in the first stage.

To understand BMO scholars' inherent assumptions and CE framing, we first selected and screened articles within this narrow BMO domain by searching the Web of Science and EBSCO databases for the term 'circular economy'. While we were aware of the other concepts (i.e., cradle to cradle) used almost interchangeably with CE (Murray et al., 2017), we were not interested in the framing of these

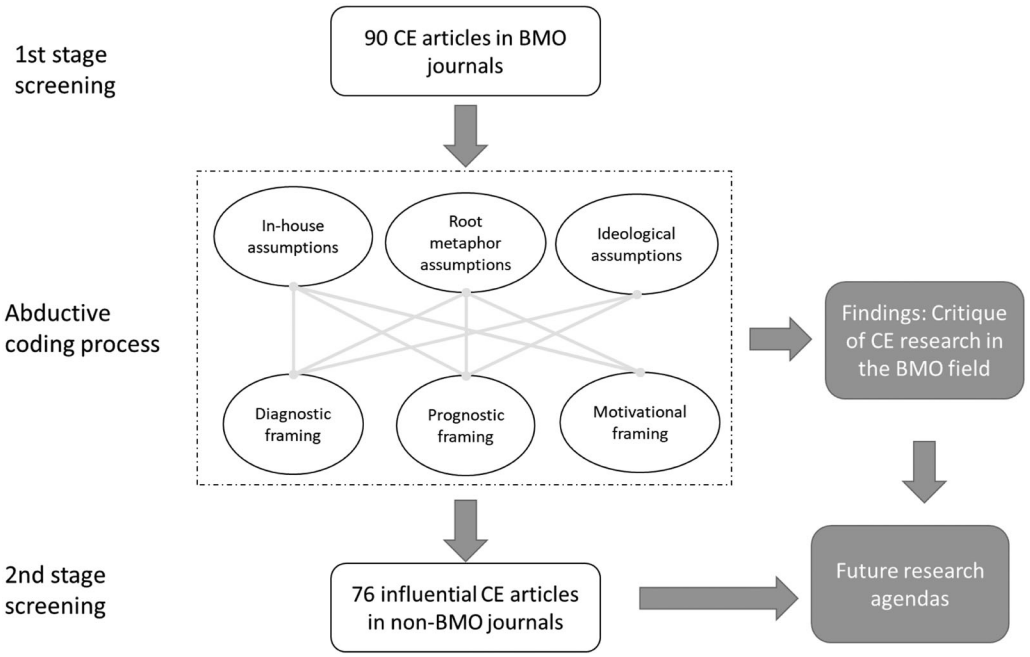


FIGURE 1 Our review process.

concepts; our attention was specifically on the CE concept. Next, we excluded articles outside the BMO scope by refining them based on the 'Business' and 'Management' Social Science Citation Index (SSCI) categories. We used the rankings published by the Chartered Association of Business Schools' Academic Journal Quality Guide—CABS list, screened the articles' abstracts and selected those that only explicitly referred to CE within the BMO domain. We used these quality criteria to identify influential BMO articles that would reveal scholars' dominant assumptions and framings. However, we recognized that there might also be influential CE-related articles with BMO relevance in multidisciplinary sustainability journals, which do not necessarily rank high in the CABS list. The exclusive reliance on journal-specific rankings as a quality criterion in reviews has attracted criticism in the past (Tranfield et al., 2003). Therefore, we also screened articles flagged as 'Highly cited' in the Web of Science, with BMO relevance, and added articles we missed due to CABS criteria. As a result, in this first stage, we identified 90 articles for review (see Supplementary Appendix C for details). This narrow sample of CE articles within BMO studies provided us with the dominant logic that guides BMO scholars' CE assumptions and framing.

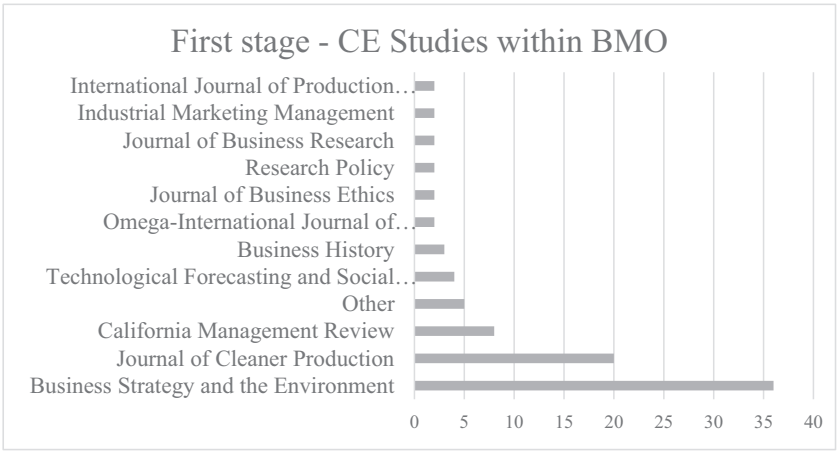
We then conducted the second stage to problematize these dominant assumptions by drawing on the broader CE debates. In the second stage, we searched for 'circular economy' in the Web of Science and Google Scholar, screened the most influential articles and identified 64 articles for review. We identified 12 further CE articles for review through snowballing, that is, from seminal papers in the review conducted at the first stage. Thus, in the second stage we reviewed 76 articles from highly interdisciplinary journals (see Supplementary Appendices B and C for details).

In total, we reviewed 166 articles. Ninety of them (first stage) were analysed in depth for our review of BMO scholars' CE assumptions and framing, and 76 (second stage) were analysed to identify alternative assumptions from fields outside BMO to guide our problematization and future research suggestions.

Overview of journals in the review

We observed differences in the journal audiences between the first and second stages (see Figure 2). In the first stage, *Business Strategy and the Environment* published most of the CE articles we reviewed, followed by the *Journal of Cleaner Production* and a special issue by the *California Management Review*. In the second stage, the top-cited influential articles that impacted CE research appeared in the *Journal of Cleaner Production*, *Resources, Conservation and Recycling*, the *Journal of Industrial Ecology* and *Ecological Economics*.

These trends and authorship patterns showed that many BMO scholars published CE-related articles in interdisciplinary journals. However, aside from a few mainstream outlets, their works have not featured in highly ranked BMO journals. On the other hand, many highly cited CE papers with a BMO focus were published in the *Journal of Cleaner Production*. Our observation is similar to that of



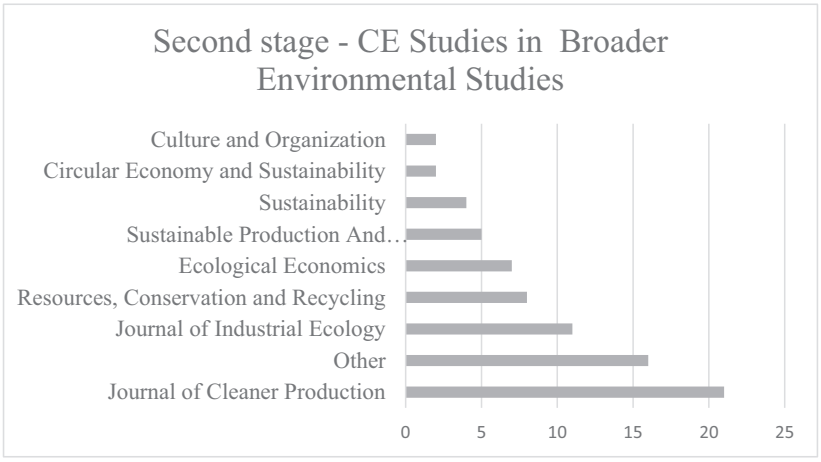


FIGURE 2 Journal audiences in stage 1 and stage 2.

Nyberg and Wright (2020), who noted a distinct absence of climate change research within BMO. We observed that CE research has been scarce in leading journals. Like Wohlgezogen et al. (2021), we found that most CE research, even that of many BMO scholars, was featured in interdisciplinary environmental studies journals. As Wohlgezogen et al. (2021, p. 5) point out, these trends reflect the 'editorial choices at leading management journals rather than business school academics' lack of interest' in CE. Because a transition to CE necessitates significant changes in the economic system, this has important implications for theories in BMO, such as those about organizational resources, culture and cognition. Therefore, we suggest that leading management journals and their editorial teams should show greater openness towards CE research.

Qualitative coding and data analysis

We decided to code the articles following abductive reasoning, 'a process whereby actors infer and apply implications from a narrative to their particular context' (Bartel & Garud, 2003, p. 330), and used an analytical framework moving back and forth between theory, method and data (see Figure 1) (Dubois & Gadde, 2002).

The review process was collaborative, guided by the concepts of assumptions and framing, using the manual coding features of NVivo 12 Plus. The coding workload was shared between the authors. Cross-coder reliability was ensured in two ways. First, codings were cross-checked for nine articles. Second, we developed an explicit coding scheme that all coders were to follow (Saldana, 2009), identifying questions to help us code for in-house, root metaphor and ideology assumptions and diagnostic, motivational and prognostic framing strategies.

The assumptions and framings were coded separately. In most cases, the codes overlapped. Thus, the codes could be analysed further through matrix coding, allowing the simultaneous coding of assumptions and framing (where possible). To compare and contrast articles in the first and second stages, we coded how articles reviewed in the second stage differed from those in the first stage and noted their contributions to our problematization process (see Supplementary Appendices A and B).

Finally, it is essential to acknowledge that as scholars in the BMO field ourselves, we also bring our own

assumptions to the research. We support a strong sustainability orientation in which the economic system is fundamentally embedded into the global biosphere and society, and believe there is no long-term future for an economy that fails to deliver environmental and social sustainability. Therefore, we consider it paramount to scrutinize CE assumptions in order to uphold the promise of sustainability. It is equally essential to broaden the conversation around the topic to ensure that significant limitations, boundary conditions, alternative paradigms and future pathways are not left unconsidered.

REVIEW INSIGHTS

In this section we detail our main findings. They are discussed according to the three main categories of assumptions: in-house, root metaphor and ideology. We also discuss how each category of assumptions is tied to the different ways in which BMO scholars framed CE (see Appendices 1-3 for a summary).

In-house assumptions

As expected, the BMO discipline featured various *in-house assumptions*. Mainly, these perspectives aim to extend existing BMO theorizing to CE as a new context rather than fundamentally questioning the validity of the underlying assumptions of BMO theories in the light of CE. We identified four in-house assumptions that require further problematizing: the relationship between CE and corporate sustainability, the business model focus, business case thinking and the role of stakeholders.

Assumptions about the relationship between CE and corporate sustainability (CS) were often associated with the motivational framing of CE. Here, we observed how scholars framed CE as a paradigm that would decouple natural resource use and economic growth (Demirel & Danisman, 2019; Esposito et al., 2018; Jabbour et al., 2019), which would also reduce waste generation (Hansen & Le Zotte, 2019). Some scholars went beyond decoupling to predict that CE would lead to regenerative systems (Gupta et al., 2019; Jones & Wynn, 2019) and proactive ecological benefits (Genovese et al., 2017) rather than mere harm reduction. More instrumentally, CE was also predicted to preserve material values and reduce resource scarcity (Moktadir et al., 2020; Parida et al., 2019). CE was therefore presented as a win–win opportunity in alignment with business case thinking (Frishammar & Parida, 2019; Genovese et al., 2017). For these reasons, scholars assumed that implementing CE-related strategies would contribute to CS efforts and improve the firm's sustainability performance (Khan et al., 2020a; Murray et al., 2017). Crucially, this assumption led to viewing CE as an omnipotent concept that can be applied to all grand challenges (Corvellec et al., 2020).

Second, scholars assumed that the CE transition will be built on business model transformation (De Giacomo & Bleischwitz, 2020; Frishammar & Parida, 2019; Linder & Williander, 2017). This was particularly evident in prognostic framing, which strongly assumed that business model change and transformation would bring about broader systems change (Genovese et al., 2017; Hofmann & Jaeger-Erben, 2020). This assumption can be problematic if it ignores the need for change from the other (non-business) actors that affect the economic system. The assumption was also linked to the expectation that circular business models would create and capture economic and environmental value (Centobelli et al., 2020; Ranta et al., 2018; Unterfrauner et al., 2019).

Alternatively, business model transformation included pessimistic expectations regarding the future of CE by identifying the difficulties this future would entail, which thus informed scholars' prognostic CE framing. This was manifest in framing CE as a trendy or alternative business model (Hazen et al., 2017). Some made the point that while 'the goal is clear, how to achieve it is not' (Frei et al., 2020, p. 1926) and discussed the difficulties of implementing the CE agenda (Lieder & Rashid, 2016; Rizos et al., 2016). They noted that businesses must develop extensive knowledge and capabilities (Garcia-Quevedo et al., 2019; Khan et al., 2020a; Scarpellini et al., 2020), unlearn existing organizational routines (Hofmann & Jaeger-Erben, 2020; Urbinati et al., 2017) and acquire new resources—whether it be a skilled workforce (Burger et al., 2019), capital for new investments or technology (Demirel & Danisman, 2019). Scholars also reported evidence of decoupling means and ends when it comes to CE initiatives at corporations (Stål & Corvellec, 2018, 2021).

Assumptions related to business model transformation also involved *predictive* framing statements of bringing a 'paradigm shift' (Genovese et al., 2017; Govindan & Hasanagic, 2018; Gupta et al., 2019), leading to potential utopian or dystopian futures. Utopian views ranged from the general, such as the stance of Rajala et al. (2018, p. 41) that 'all new products must be comprised of existing or discarded ones', to the specific, such as the vision presented by Garmulewicz et al. (2018) which entailed techno-utopian 3D printing networks that make goods from locally recycled plastic. A dystopian framing included the dire consequences for the future if we failed the circular transition, given the LE's dominance. For instance, Confente et al. (2020, p. 431) emphasized that 'by 2050, there will be more plastic in the sea than fish'. While other scholars proposed the transition to CE as a way of

moving away from this dystopian future, Norris (2019, p. 217) used religious imagery to critique the utopian framing, calling the shift from ownership to services a 'transcendental economy geared towards planetary salvation' through which companies 'can grant themselves absolution'. Norris (2019) also warned of a potential dystopian future if we transitioned to CE. In this dystopian CE future, servitization would transfer power to for-profit organizations, citizens would face major data privacy breaches, consumption would increase and there would be more negative impacts on the natural environment and society. These contradictory imaginaries underscore the complexity and uncertainty of the LE grand challenges and the proposed CE solutions.

Third, scholars often assumed that technology and design would play critical roles in enabling the business case for CE, again associated with CE's motivational framing. The efficient use of natural resources was an important goal of CE technology and design (Frishammar & Parida, 2019; Gupta et al., 2019; Kristensen & Mosgaard, 2020). Here, LE was implicitly diagnosed as an inefficient economic model. Innovation was predicted to be necessary for the CE transition (Garcia-Quevedo et al., 2019; Garmulewicz et al., 2018; Rajala et al., 2018) and was often presented as an unquestionably good thing. Innovation in design and technology for improved efficiency was manifest in different ways. For instance, technological concepts such as Industry 4.0 and technologies like blockchain were assumed to enable CE business development and extend material lifetimes (Centobelli et al., 2020; Jabbour et al., 2019). Extending material lifetimes through design was viewed as having positive business impacts and enhancing the environmental performance of firms by reducing lifecycle impacts (De Giacomo & Bleischwitz, 2020; Dey et al., 2019). However, some discussed the potential negative implications of products designed for longevity being harder to break down because of their 'exotic chemistry' (Murray et al., 2017).

Some scholars, such as van Loon et al. (2018), critiqued the dominance of the business case view and argued that CE may not always yield optimum outcomes for the natural environment or a company. Due to the business case assumption, potential trade-offs, tensions and paradoxical situations were discussed less. A few scholars addressed this by highlighting that not all CE initiatives carried out by companies would bring their costs down or provide any other economic benefits, but on the contrary, some would bear costs (Garcia-Quevedo et al., 2019). Frei et al. (2020) and Linder and Williander (2017, p. 1937) emphasized that the CE transition is about 'dealing with trade-offs between conflicting goals of economic, ecological, and social nature'. However, how this resolution would come about was somewhat ambiguous, though they did hint at the potential role of partnerships.

Fourth, many scholars emphasized that the CE transition relies on stakeholders and partnerships, ranging from employees (particularly managers), customers and national governments to supply chain partners and innovation ecosystems (Gupta et al., 2019; Parida et al., 2019). To enable the CE transition in companies, scholars prescribed a list of various activities related to employees and internal resources, including the development of new employee and managerial competencies (Perey et al., 2018), creating management practices for value creation (Morales & Sossa, 2020) and developing tools and strategies to shift from LE (Chen et al., 2020; Ferasso et al., 2019). Others focused on customers and the role of individuals' choices as the social acceptance of CE would depend on them (Frishammar & Parida, 2019). These scholars highlighted consumers' role in bringing bottom-up change through the adoption of circular innovations (Hazen et al., 2017; Ranta et al., 2020) and pro-environmental attitudes and behaviour (Confente et al., 2020; Sarigöllü et al., 2020). Less was said about how coordination between all these stakeholders whose interests and worldviews are different in the future CE scenario would arrive at a shared prognostic framing.

Other scholars underlined the crucial role of the state in setting standards and introducing certifications and eco-labels to steer business and technology development (Garcia-Quevedo et al., 2019; Hopkinson et al., 2018; Kunz et al., 2018), as well as in designing market incentives (Frei et al., 2020; Jones & Wynn, 2019; Pazienza & De Lucia, 2020). Broader partnerships focused, for instance, on eco-industrial parks (Mathews et al., 2018; Rajala et al., 2018) or industrial symbiosis (Yazan et al., 2020); coordination with suppliers and customers to enable reverse logistics and co-develop circular products/services (Kunz et al., 2018; Mathews et al., 2018; Witjes & Lozano, 2016); collaboration with public actors, consumers and other stakeholders to develop networks for waste collection (Dey et al., 2019; Jabbour et al., 2019); or cooperation with research institutions (Khan et al., 2020a). Interestingly, with just a few exceptions (Frishammar & Parida, 2019; Gupta et al., 2019), little has been said about the potential difficulties in managing such collaborations, failed partnership initiatives and conflicts due to misaligned incentives. CE business development may call for partnership management strategies that differ from standard business or corporate social responsibility (CSR) partnerships.

Root metaphor assumptions

The most central *root metaphor assumption* was circularity, which was the single most defining feature of the literature reviewed. Circularity assumes that a 'closed loop' can be created by continuously reusing, repairing, remanufacturing, refurbishing, repurposing, recycling and/or

recovering all materials that were ever created (Bundgaard & Huulgaard, 2019). At the extreme, scholars assume a perfect circulation in which materials are always recovered and repurposed, leading to a significant reduction in the need for virgin materials. According to Corvellec et al. (2021, p. 6), the circle metaphor brings a 'promise of perfection, wholeness and eternity, but the simplicity of its grounding metaphor is misleading as it evokes a modernist variant of the myth of eternal return'. This was sometimes illustrated with vehicle metaphors which likened earth to a spaceship or a lifeboat at sea where it was imperative to preserve scarce resources within the system (e.g., Sassanelli et al., 2019).

These metaphor assumptions were often linked to diagnostic framings, such as the unsustainability of overconsumption and its impact on raw material security and prices (Genovese et al., 2017; Mathews et al., 2018). Scholars drew on the grand challenges to justify the need for CE, underlining the overshoot of biophysical limits (Esposito et al., 2018; Genovese et al., 2017; Perey et al., 2018), environmental pressures and material scarcity (Kunz et al., 2018; Spring & Araujo, 2017; Suzanne et al., 2020) and increasing waste and waste-led ecological crisis (Frei et al., 2020; Katz-Gerro & Sintas, 2019; Pazienza & De Lucia, 2020; Testa et al., 2020).

Another root metaphor assumption concerned the nature–industry relationship. In alignment with natural ecology's capitalization, ecosystem services were generally treated as natural resources, even when the authors were pro-strong sustainability (Perey et al., 2018). Metaphors from biology were used to conceptualize the relationship between nature and industry in a CE. Here, the material flows in a CE, as Corvellec (2019, p. 226) highlighted, would 'create waste-free technical loops that resemble biological loops'. Scholars explained how relationships between different companies would resemble 'biological metabolisms' in which waste would be framed as 'food' (Haas et al., 2015). Gupta et al. (2019), Murray et al. (2017), Stewart and Niero (2018) and Zucchella and Previtali (2019, p. 468) went even further with the biological metaphor, framing CE as 'natural ecosystems where simultaneous cooperation and competition among species helps in sustaining the ecological balance'. Cradle-to-cradle thinking was another example of this category, where CE is often discussed as a system in which materials never die, hence circulating 'cradle-to-cradle' (Frishammar & Parida, 2019).

Scholars assumed that in order to enable a CE transition, it was necessary to reframe waste (Hopkinson et al., 2018; Perey et al., 2018). Framing waste as 'food' served this role (Murray et al., 2017). Others framed waste as 'scats' by imbuing waste with ambivalently positive and negative values at one and the same time (Corvellec, 2019). Others still framed it as 'immorality' (Ciulli et al., 2019), an 'economic inefficiency' (Barreiro-Gen & Lozano, 2020) or a 'renewable resource' (Hansen & Le Zotte, 2019, p. 1). Generally, a distinction was made between waste as something inherently valuable (i.e., a resource) versus something deprived of value (i.e., a burden, matter out of place or dirt) (Corvellec, 2019; Despeisse et al., 2017; Perey et al., 2018). Interestingly, concerns about 'contamination and safety issues' (Garmulewicz et al., 2018, p. 122) in usable CE waste streams reveal that even valuable waste can be considered impure.

Finally, another common metaphor was related to the CE transition itself, which scholars conceptualized as a 'journey' (Esposito et al., 2018; Salo et al., 2020). Some scholars observed that the pace of change might not necessarily be fast. While Cainelli et al. (2020, p. 10) suggested that 'it is possibly more a reform than a revolution', Cramer (2020, p. 11) said that 'such a fundamental transition takes time and cannot be realized overnight'. Some scholars were critical of the journey metaphor and argued that it would 'legitimate today's unclear results by postponing actual commitments to a distant future' (Corvellec & Stål, 2019, p. 7), potentially hindering progress in businesses' CE development.

Ideology assumptions

Scholars were implicit about the underlying ideology when framing CE, with a few exceptions (Esposito et al., 2018). It was nonetheless possible to identify the *ideological assumptions* behind the dominant CE framing. 'Natural capitalism'-a variation of capitalism coined by Lovins et al. (1999)-was prominent. The in-house assumption of the business case and the economic motivational framing were also linked to this ideological assumption. Natural capitalism is based on the belief in market-based, technologically enabled solutions to environmental problems that allow continued economic growth. It is possible, therefore, to observe two ideological traditions in natural capitalism: neoliberalism[2] and ecological modernization[3] (Mol & Sonnenfeld, 2000).

[2] Neoliberalism is an ideology that elevates the centrality of the market, which is seen as machine-like and disembedded from society and politics (Lee Mudge, 2008). The ideology values free trade, industry deregulation and privatization, and thus the state's primary role is to 'unleash market forces wherever possible' (Lee Mudge, 2008, p. 705). In neoliberal politics, the key constituents are in the business and finance world (Lee Mudge, 2008). Market logic is 'unquestioned "common sense"' (Lee Mudge, 2008, p. 705) with, as Margaret Thatcher famously said, 'no alternative' available (Fisher, 2009, p. 8).

[3] Ecological modernization, the foundation of ideas like 'natural capitalism', is an ideology that thinks the answer to ecological problems lies in technocratic solutions that are profitable for businesses (Dryzek, 2005). It is rooted in the assumption that with the right technological solutions

Scholars frame the market as largely disembedded from society and politics, as it is in the neoliberal view (Lee Mudge, 2008) and the 'techno-corporatist' (Dryzek, 2013, pp. 165–185) strain of ecological modernization. CE was presented as implicitly apolitical, a solution for balancing the market and natural ecology that does not need to work for the public's buy-in, as evidenced by the lack of discussion around governments taking up CE as an issue on their platforms. Instead, echoing neoliberalism and ecological modernization, the state's role was primarily presented as fostering CE's market potential, as discussed above in the in-house assumptions around states' CE efforts. Even scholars who advocate state regulation-for example, to make it so that 'the environment is not a free commodity but has a price tag' (Govindan & Hasanagic, 2018, pp. 303–304)-still do so within a market-oriented paradigm.

The market orientation was also present as scholars distinguished between LE and CE consumption (Appelgren, 2019) and sought answers to how to increase circular consumption (Alonso-Almeida et al., 2020). Paradoxically, in some cases this risks increasing resource consumption (Despeisse et al., 2017), despite some promoting CE to reduce consumption (Esposito et al., 2018). For instance, Hansen and Le Zotte (2019) suggested that the second-hand trade does not necessarily meet environmental objectives and still encourages rather than challenges a form of consumerism. Tukker (2015) discussed the limitations of renting, leasing and sharing models, highlighting that they are not a panacea for sustainability. Others focused on the consumers' view that products made from waste are of poor quality and on the resulting low demand for recycled products, both of which were seen as barriers in the CE transition (Garmulewicz et al., 2018; Govindan & Hasanagic, 2018). Consumer education was prescribed as a remedy (Garmulewicz et al., 2018; Govindan & Hasanagic, 2018), and some emphasized the importance of the state educating its citizens (Sarigöllü et al., 2020).

Scholars furthermore stressed that CE needed to affect a shift in the ideas of ownership embedded in LE. Here, changing ownership patterns were often achieved through the introduction of servitization, whereby products are no longer owned by users but instead accessed as services (Despeisse et al., 2017; Murray et al., 2017), often exemplified by the famous cases of Rolls-Royce engines or Xerox publishing services. According to Corvellec (2019), this shift would transfer the responsibility for dealing with waste from individual customers to producers. Hence, it is often viewed as a positive move. Similarly, sharing models also introduced a change in ownership, mainly through online platforms, allowing different users to access and share a particular product or a service, thereby increasing utilization and reducing inefficiencies, often exemplified by car-sharing businesses (Linder & Williander, 2017; Ranta et al., 2020). Interestingly, these ownership modes relied heavily on transferring ownership from one private mode (i.e., held by individuals) to another (i.e., controlled by a platform owner or a firm). Public or cooperative ownership of assets or platforms was less pronounced. This demonstrates that scholars did not envision CE in non-market ways of organizing the exchange of material goods but instead stayed within the capitalist economic system.

The second ideology identified was ecological modernization, evidenced by framings related to green growth, such as prognostic framings focusing on triple-bottom-line benefits and opportunities (Sassanelli et al., 2019) and motivational framings around preserving natural resources through CE (Govindan & Hasanagic, 2018; Gupta et al., 2019). Scholars promoted CE by especially emphasizing the economic benefits to firms of adopting it. CE was thought to contribute to creating a more productive and efficient economic system (Esposito et al., 2018; Morales & Sossa, 2020), enhancing companies' image (Confente et al., 2020), creating new markets (Frei et al., 2020), leading to new business opportunities (Cainelli et al., 2020; Moktadir et al., 2020) and reducing costs (Jones & Wynn, 2019). The intertwining of economic and environmental/social motivational framing was central. This became especially apparent with raw material security, another grand challenge with economic and societal implications (Barreiro-Gen & Lozano, 2020). Confente et al. (2020, p. 432) emphasized how the shift from 'a linear to a circular economy [would transform] waste back into a raw material suitable for replacing natural raw materials'.

The green growth framings were particularly apparent in pro-growth rhetoric. Scholars were explicit that CE would align with market logic and not harm the notion of profit maximization (Hopkinson et al., 2018; Linder & Williander, 2017; Zucchella & Previtali, 2019). For instance, Ferasso et al. (2019, p. 1) promoted CE as it tackles negative externalities 'without jeopardizing growth and prosperity'. Prieto-Sandoval et al. (2018b, p. 1525) argued that '[CE] does not reject economic growth but sets limits on the exploitation of resources; if human societies pursue growth, they should be limited to the closed-loop of resources and energy'. The in-house assumptions

(Mol & Sonnefield, 2000), it is possible to decouple economic growth from ecological harm (Dryzek, 2005). In ecological modernization, nature is seen as a resource and/or waste-processing site rather than having intrinsic value in its own right (Dryzek, 2005). It believes in the manageability of nature and that partnerships within and across sectors are necessary, natural relationships (Dryzek, 2005). While in its most radical forms it may offer potential avenues for more fundamental reorganization, the intertwining of neoliberal values constrains that transformative potential (Coffey & Marston, 2013). In this way, ecological modernization has been criticized as a 'rhetorical rescue operation for a capitalism economy confounded by ecological crises' (Dryzek, 2005, p. 174).

around how CE would decouple economic growth from environmental pressures and virgin resource consumption (Demirel & Danisman, 2019; Esposito et al., 2018; Jabbour et al., 2019) are clearly rooted in this ideal of green growth.

Scholars motivated others to CE by emphasizing its sustainable development contributions (Morales & Sossa, 2020). Among other sustainable development goals (SDGs), SDG 12: Ensure Sustainable Production and Consumption was directly associated with CE's benefits (Demirel & Danisman, 2019). The ecological benefits of CE included its potential to solve the environmental grand challenges created by LE. Here, scholars argued that CE would address the diagnosed grand challenges by preserving natural resources, by revaluing or eliminating waste (D'Adamo et al., 2020; Ethirajan et al., 2020) and ultimately by answering the challenge of the Anthropocene (Brown & Bajada, 2018; Corvellec, 2019).

FUTURE RESEARCH DIRECTIONS

Thus far, we have synthesized our findings on BMO scholars' CE assumptions and framings. These findings uncovered problematic assumptions in three key categories. In-house assumptions included assumptions of CE contributing to corporate sustainability, a business model focus, an emphasis on business case thinking and conventional stakeholder perspectives in CE. Root metaphor assumptions included circularity, a symbiotic nature–industry relationship, reframing waste through various metaphors (e.g., food, scats) and positing the CE transition as a journey. Lastly, ideology assumptions included neo-liberalism and ecological modernization. Problematizing BMO scholars' assumptions about CE is crucial for developing a more diverse understanding of CE.

Next, with the help of an expanded analysis of CE-related articles outside the BMO domain (second stage of our review process), we will further critique these findings and suggest three distinct agendas for future research. Specifically, we draw on articles that provide alternative conceptualizations of CE that may challenge the assumptions we identified in the BMO subset (Calisto Friant et al., 2020; Corvellec et al., 2021; Geisendorf & Pietrulla, 2018; Kirchherr & van Santen, 2019). We summarize our critique and proposed future research directions in Table 2.

The limitations of CE models within businesses

The primary future research agenda we want to propose concerns the limitations of CE models within businesses. These suggestions stem from our findings related to the high emphasis on the business case for CE and shared value thinking, as well as the alignment of CE and broader sustainability agendas. Next, we outline our more specific suggestions for future research to address these assumptions.

Firstly, future research should go beyond the business case assumption. Some scholars have indeed highlighted that not all CE initiatives carried out by companies would bring down their costs or provide any other economic benefits, but on the contrary some would actually bear costs (Garcia-Quevedo et al., 2019; Linder & Williander, 2017) or create trade-offs (Frei et al., 2020, p. 1937). Due to the rebound effect and entropy, such views are more realistic and could help save the emerging CE conversation from the current win–win framing. We suggest that future research should more carefully examine the potential tensions, trade-offs and paradoxes involved in CE. For example, a more comprehensive examination of the impact of CE strategies with methodologies like LCA could help uncover potential trade-offs between economic and environmental dimensions.

Secondly, future research should elaborate on the relationship between CE and CS. Instead of framing CE as an omnipotent solution to many grand challenges, focusing on the potential mediators and moderators of the CE–CS relationship and the tensions between CE–CS agendas would likely generate novel conversations (Geissdoerfer et al., 2017; Genovese et al., 2017; Hart & Pomponi, 2021; Sauvé et al., 2016). We note this not only for CE research but also for future research on grand challenges in general because here, too, we benefit from a more cautious economic motivational framing that emphasizes the moral reasons for taking action on grand challenges.

CE scholars continue to neglect some important questions related to the directionality of the CE–CS relationship. Do prior CS efforts help in the transition towards CE, or do investments in CE practices help advance CS? Or does it perhaps work both ways? Most importantly, are there areas where investing in CE might not improve but on the contrary hinder CS? Furthermore, social sustainability is under-addressed in CE research, and future research should also incorporate methodologies related to social impact assessment to understand tensions and trade-offs related to environmental and social sustainability dimensions.

Thirdly, the assumption that CE automatically improves environmental sustainability becomes problematic when considering entropy, a concept much discussed in the broader field of ecological economics research (Korhonen et al., 2018a). Entropy increases as materials are circulated (Andersen, 2007, p. 134) and will ultimately limit the sustainability potential of CE (Korhonen et al., 2018a, p. 42). Hence, taking entropy into account would require

TABLE 2 Our critique and future research directions

Critique of assumptions	Future research directions
Agenda 1: Exploring the limits and boundary conditions of circularity within businesses	
• Business case is often assumed or required for CE, obscuring potential trade-off situations • CE and corporate sustainability (CS) are often conflated, and thus CE is often treated synonymously with sustainability • Physical limits of circularity are not considered, leading to exaggerating the overall economic potential of CE • Assumptions of decreasing material use and complete decoupling of resource use and economic growth	• Exploring limitations of the business case and elaborating further on the tensions, paradoxes, trade-offs • Evaluating CE–CS relationships through mediation–moderation and providing clarity on directionality • Considering entropy to explain the limitations of circulation • Elaborating empirical evidence on the extent to which 'decoupling' could work
Agenda 2: Broadening perception of agency in CE	
• Overly focusing on business models obscures the systemic nature of CE as well as the role of non-business actors • Focusing on piecemeal solutions obscures the systemic nature of CE • Focus on dyadic partnerships ignores larger collective forms of collaboration • Lack of attention on cross-sector partnerships or the role of non-business actors • Partnership outcomes are often assumed to be positive, which is not always the case • Some metaphors downplay agency • Overemphasis on CE models in developed economies	• From business models to broader systems of actors • Designing collective systemic action and exploring the potential of polycentric governance in the future of CE • Giving attention to forms of organizing other than businesses, such as the public sector and cooperative ownership of resources • Exploring the dark side of partnerships in the CE transition • Exploring south/north differences and CE's inclusivity of the global south
Agenda 3: Exploring more radical CE futures	
• Failure to question the growth imperative • Journey metaphors limit the speed of change • CE often tied to natural capitalism and neoliberalism • Technocentrist assumptions obscure alternative pathways to increasing circularity	• Taking into account degrowth and (over)consumption and incorporating critiques of natural capitalism, neoliberalism and ecological modernization into CE debates • Looking at new technologies with more neutral framing • Engaging with 'future imaginings' research to explore potential CE futures, including dystopian futures • Considering the shortfalls of root metaphors (e.g., the metabolism metaphor and its lack of emphasis on agency, or the speed of change with the journey metaphor) • Using more future-oriented and normative research methods such as design science

challenging the embedded growth paradigm. Surprisingly, only a few articles in BMO journals have referenced entropy (Genovese et al., 2017; Murray et al., 2017; Van Engeland et al., 2020).

Since the reality of entropy punctures the perpetual circulation ideal, CE must grapple with the limited potential of closing material loops. One possible avenue is provided by the alternative metaphor of 'slowing material loops' (Suárez-Eiroa et al., 2019). The true slowing of material throughputs requires radically changing the paradigm of perpetual economic growth. This would mean reducing the material intensity of our lives instead of trying-in vain, due to entropy-to maintain our current materiality without virgin inputs through strategies like recycling and remanufacturing. It would also make it more feasible to sync our material flows with ecological systems' regeneration and absorption rates (Suárez-Eiroa et al., 2019).

Broadening perception of agency in CE

The second future research agenda we propose goes beyond businesses as the focal units of analysis in CE and broadens the idea of agency in CE through other forms of organizing. This would include other formal organizations such as non-governmental organizations (NGOs) and the public sector, but also collective systems of organizations, as well as exploring CE models in other contexts besides the Global North.

Firstly, we found that in-house assumptions around CE often emphasize business models and their transformation. The business model construct helps conceptualize social and environmental value creation (Bocken et al., 2016; Lüdeke-Freund et al., 2018). However, it also introduces certain limitations. First, its emphasis on businesses leaves out other forms of organizing (i.e., collective or

cooperative modes of organizing) (Bocken et al., 2018; Boons, 2021). Future research could delve deeper into these alternative modes of organizing in the circular economy. Second, the business model construct underscores the role of local and global ecosystems in which focal firms operate; hence, it should be combined with the broader ecosystem view and systemic approaches (Parida et al., 2019).

Secondly, in light of this, it is crucial to build micro–meso–macro connections to explore the role of businesses in the CE transition using a multi-level perspective. The transition will only be possible if businesses have interactions with other societal stakeholders. Future studies can benefit from macro-level perspectives focusing on ecosystems, polycentric governance models and collective action (Ostrom, 2003, 2010). Industrial ecology, a precursor to much CE research, may inform BMO researchers in this regard, as collective phenomena such as industrial symbiosis have received extensive theorizing (Ghisellini et al., 2016; Merli et al., 2018). These approaches would also help with identifying transformation opportunities on a larger scale (Wastling et al., 2018, p. 15), while conceptualizing the transformation as a business model change risks missing such opportunities that can be created through ecosystem interactions. A similar risk not only exists in CE research but also applies to other grand challenges. Therefore, macro-level perspectives can also be helpful in the broader grand challenges research.

Thirdly, in alignment with the above, it is beneficial to join the conversation about the state's role in CE governance, especially when conceptualizing the potential CE futures at a national and global scale. In the BMO domain, the state's role is aligned with the neoliberal view that the state is primarily meant to 'unleash market forces' (Lee Mudge, 2008, p. 705). In our study the state's role centred mostly on unleashing CE through various incentives. The responsibility for making changes (in the BMO domain) rests mainly with individuals and private companies. Calls for regulations were noticeably more muted, with a few exceptions (Govindan & Hasanagic, 2018, p. 304). Future research about the role of the state in CE should include the failure to set limits on extraction (e.g., via expanded nature conservation), the role of trade agreements in material flows and enforcing CE goals, and the potential need for new types of regulation as CE solutions are implemented, such as limiting the risk of monopolization for online sharing platforms. Such impending regulations have important implications for CE businesses. Potentially, they may create risks for platform-based CE organizations and competitive advantages for businesses with comprehensive CE plans. Therefore, we also emphasize the need to elaborate on states' roles in tackling grand challenges, generally within BMO studies.

Fourthly, in studies that we identified as focusing on partnerships, we saw much optimism about collaboration, paralleling the SDG 17 view of partnerships as a solution to many grand challenges (Chakrabarti et al., 2018). However, the dark side of partnerships has not received much attention. The optimism about partnership outcomes leads to a bias that discards the possibility of unintended consequences of partnerships. While partnerships facilitate creating a problem-solving space, they may also incentivize solutions that favour a more powerful partner (Boons, 1998). Therefore, it is more realistic to conceptualize partnerships as platforms of tensions between cooperation and competition—coopetition—and between different stakeholders who target different environmental and economic benefits (Manzhynski & Figge, 2020). Some critical scholars even argue against romanticizing partnerships due to their embeddedness in neoliberal governance, which covers up their failures (Vestergaard et al., 2019). We emphasize the need for caution when framing partnerships as a panacea for grand challenges.

Lastly, in an era of global value chains, future CE literature should also address the geography of biophysical limits and attempted decoupling. While many studies within BMO captured a more 'Eurocentric' view of CE, there were also those calling for a CE transition inclusive of the Global South (Hofstetter et al., 2021; Merli et al., 2018). Indeed, previous reviews found that almost 95% of CE articles represent developed economies (Kirchherr & van Santen, 2019). This may relate to the oft-critiqued absence of social sustainability in much CE research, mentioned in the previous section. Therefore, the socio-materiality of CE and its linkages with social sustainability requires further exploration, especially considering the exploitation in global supply chains that enables our materially intensive lives.

Exploring more radical futures for CE

The third research agenda we suggest focuses on exploring more radical futures for CE. The findings from our review showed that CE research in BMO relies fundamentally on ideologies stemming from the prevailing capitalist system along with ecological modernism, with only scant attention paid to alternative futures.

Firstly, future research should do more to question the idea of economic growth, which often underpins CE research. We found that the idea of decoupling was inherent in much of CE research. By decoupling growth from resource use (Ghisellini et al., 2016), scholars maintained underlying ideological assumptions of natural capitalism, neoliberalism and ecological modernization. Indeed, some

even argued that the CE narrative clouds the need for a transformation of production and consumption systems due to their alignment with capitalist interests (Corvellec et al., 2020).

Considering the above critique, it is necessary to expand the debate on how CE could further incorporate degrowth (D'Amato et al., 2019; Hobson & Lynch, 2016; Schröder et al., 2019) and steady-state economics (Ghisellini et al., 2016; Pin & Hutao, 2007). As it stands, the CE literature in BMO tends to lean towards green growth with its decoupling assumption (Velenturf & Purnell, 2021). On the other hand, the degrowth movement proposes a more radical transformation as it shakes the ground of the much-idealized decoupling and critiques the sole reliance on market forces (D'Amato et al., 2019). We agree with those scholars who argue that future CE research needs to incorporate some elements discussed in the degrowth domain (Hobson & Lynch, 2016; Schröder et al., 2019) since, contrary to expectations, some CE initiatives may entail an increased use of the very resources or energy they aim to reduce (Figge & Thorpe, 2019; Geyer et al., 2016; Schröder et al., 2019; Sorrell & Dimitropoulos, 2008; Zink & Geyer, 2017). Scholars need to consider the rebound effect that addresses the trade-offs of eco-efficiency initiatives (Morseletto, 2020). For BMO research, this would require exploring the types of novel business models potentially thriving under degrowth conditions and the changes that degrowth would cause in marketing and sales.

Secondly, while the reviewed articles include many critiques of LE, it appears that, much as in other areas of business and society, they ignore the 'elephant in the room'—capitalism itself (de Bakker et al., 2020). After all, natural capitalism shares many assumptions in common with the economic system that resulted in the Anthropocene age. Here, it is necessary to join and expand upon the recent critical conversations on capitalism and research at the crossroads of business, management, nature and society (Banerjee, 2020; de Bakker et al., 2020). Reconciling CE and ecological limits could instead mean engaging with discourses on accommodating resource inputs and outputs to planetary boundaries. It could also mean looking critically at the potential for an absolute decoupling of natural resources and economic growth (Kjaer et al., 2019).

Prescriptive framings of CE in particular took for granted the role of technology and presented it uncritically as a solution. Technology was absent from the diagnostic framing and problematization of LE, despite the critical role of technological development in enabling mass production and consumption (Hart & Pomponi, 2021). Problematizing the role of technology in CE research would mean having to grapple with the contradiction that technology has facilitated both widespread ecological destruction and an unprecedented increase in material standards of living, at least for many people in industrialized societies. Scholars could problematize the role of technology through a more neutral framing (Hart & Pomponi, 2021). Future research should, for instance, acknowledge and explore the potential social sustainability risks of technologies seen as critical enablers of CE, such as sharing platforms.

Thirdly, we identified that CE framings often constitute predictive framings of dystopian futures if LE were to be the dominant paradigm, and predictive framings of utopian futures if the transition to CE were to be a success, with a few exceptions that were critical of CE and questioned the possibility of dystopian CE futures (Norris, 2019). While the potential CE futures outlined were generally optimistic, they rarely challenged the existing assumptions. In this regard, it could be fruitful to continue the discussion started by Norris (2019). Future research could delve further into the potential dystopian futures of CE development. For instance, what might a dystopian future look like that is based on resource sharing, where personal ownership of assets is eroded and where the precarity of the gig economy becomes widespread throughout society?

Fourthly, it is vital to also scrutinize popular metaphors in CE. We found that root metaphor assumptions related to circularity and metabolism are one of the dominant drivers of how CE is conceptualized. These metaphors have already been critiqued elsewhere for undervaluing the role of agency, falling short in incorporating ethics and creating an analogy between natural ecosystems and anthropogenic systems that gives rise to ambiguity in attributing responsibility (Korhonen, 2003). Beyond this, Corvellec et al. (2020, p. 100) argue that the circle is a powerful symbol and 'for adepts of the CE, it is enough to build perfect circles to take one's material responsibility-the term adept suggesting here that the CE is often more a matter of faith than of facts'. Future research should consider alternative metaphors to address these issues and place a higher focus on issues such as human agency and ethics. For instance, Murray et al. (2017) suggest a concept of bio-participation, focusing on the role of humanity in the existing biosphere rather than mimicking the biosphere.

The journey metaphor used by some scholars (Esposito et al., 2018; Khan et al., 2020a; Rajala et al., 2018) also attracted some critical attention. While some view the journey metaphor as a helpful way of conceptualizing corporate progress (Adams et al., 2016), others problematized the metaphor for masking corporate inaction (Audebrand, 2010) and disabling more radical solutions to grand challenges (Milne et al., 2016). Therefore, we note that future research on CE would benefit from metaphors that welcome more radical solutions with the potential for more rapid progress and radical solutions.

Finally, a research agenda oriented towards more radical futures for CE also requires methodological diversity. CE studies in the BMO realm often use conventional quantitative or qualitative research methods that aim to explore or explain phenomena with existing data. More practice-driven studies with a future-oriented perspective and a stronger normative orientation-rooted, for example, in design science or engaged scholarship-are also needed in BMO CE research. Design thinking has been used extensively in CE (Mendoza et al., 2017), but much of this work has been outside core BMO journals, instead appearing in journals like the *Journal of Cleaner Production*.

CONCLUSION

In this paper, we conducted a problematizing review of BMO scholars' CE assumptions (in-house, root metaphor and ideology) and discussed how these assumptions are associated with the way scholars frame CE (diagnostic, motivational and prognostic). Furthermore, by drawing on the broader CE literature in environmental studies and ecological economics, we problematized these assumptions and offered three future research agendas by focusing on the limitations of CE models within businesses, broadening the perception of agency in CE and exploring more radical futures for CE. In doing so, we contributed to the literature in three ways.

Our first contribution is to the scholarly conversation on CE in the BMO literature by providing a methodical critique of CE. While the volume of CE research has increased rapidly in recent years, there is a dearth of critical perspectives on the phenomenon in the BMO field, and CE is at risk of becoming a hembig concept with poorly defined boundaries and unclear definitions. We started out by making explicit the implicit in-house, root metaphor and ideological assumptions informing CE research. We problematized many of these assumptions and linked the CE literature within BMO with broader environmental studies and ecological economics discussions. We believe this type of review is critical in the BMO domain. Because businesses are considered the primary economic actors responsible for responding to grand challenges, it is vital to carefully scrutinize the assumptions of BMO scholars that guide potential pathways to sustainability.

Our review pointed at three distinct agendas for future research, which can enrich CE research in the BMO domain by providing a better understanding of the limits of circularity, a more diverse view of agency in CE and more radical future scenarios for CE. Our work continues and extends recent critical work on CE (Corvellec et al., 2021) by methodically uncovering and scrutinizing the assumptions that underpin CE research. Although others (Corvellec et al., 2021) have identified similar criticisms of CE as we do, namely the techno-economic focus and unclear boundaries of CE, our work complements and extends this line of critique in three ways: by providing three specific and comprehensive research agendas for future work; by using assumptions and the problematizing review as a framework and method to provide a critical perspective on CE; and by focusing specifically on CE research in BMO, which allows us to get a more fine-grained view of the roots of the techno-economic emphasis identified in previous reviews.

Secondly, our study steps towards solidifying the problematizing review as a review method. The method was introduced by Alvesson and Sandberg (2020) in their methodological article as a counterpoint to the more traditional, integrative systematic review. Here, we demonstrate how the method can be used. Following Alvesson and Sandberg (2020, p. 3), we emphasize that problematizing reviews should tackle hembigs. More recently, Alvesson and Blom (2021) have provided insights into how the leadership, strategy and institution domains demonstrate the emergence of hembigs within organization studies. They warn that an umbrella concept such as CE 'becomes a hembig when it takes a strong grip over a community and the pressure to use it becomes hard to resist' (Alvesson & Blom, 2021, p. 21). Our review shows that CE is well on the way to becoming a hembig concept and therefore it is imperative that we, as scholars, reflect on our own framings and assumptions. We encourage other BMO scholars to use the problematizing review to achieve a better understanding of hembig concepts.

Our research specifically demonstrated an example of a problematizing review (Alvesson & Sandberg, 2020) and paved the way for future research to combine the lenses of framing and assumptions in such reviews. We benefited from the categorization of assumptions (in-house, root metaphor and ideology) by Alvesson and Sandberg (2011). This categorization helped us elucidate how certain assumptions of a literature area, specific metaphors that help scholars' conceptualizations and dominant ideologies (even when not spelled out explicitly) shape scholars' framing of a concept such as CE. We believe that such a categorization would also yield exciting insights into how scholars frame other grand challenges and solutions to these challenges.

Thirdly, we shed light on the responsibility of scholars when framing grand challenges and solutions to these challenges, contributing to the scholarly conversation on grand challenges. CE holds considerable promise as a solution to some of the grand environmental challenges faced by humanity. Our review showed that CE is often framed using the very assumptions of a system that has caused the sustainability challenges that CE aims to tackle. The

BMO community plays a crucial role in tackling grand challenges and is responsible for framing challenges and potential solutions. Our review made it clear that scholars' framing often bears assumptions that require further problematization, which also has important implications for the practice of CE. The over-optimistic perceptions of CE we identified, which do not consider the limitations and boundary conditions of circularity, may hamper effective business responses to grand challenges. For instance, if only win–win situations are considered, or if CE strategies are prioritized over other, potentially more suitable sustainability strategies, this may hinder the overall goals of sustainable development. Additionally, if managers and policymakers perceive CE simply as a matter of transforming business models, then actions aiming for broader systemic transformations may be undone. Most importantly, the assumptions regarding CE and decoupling may ultimately contribute to continued growth beyond planetary boundaries. We hope that our study will encourage others to explore and problematize the fundamental assumptions underlying grand challenges and their proposed solutions.

The growing conversation on grand challenges would also benefit from making explicit scholars' framings and assumptions so as to save grand challenges from becoming another hembig concept. To do so, joining Alvesson and Blom (2021), we urge BMO scholars to engage in mindful and reflexive practices so that the concept of grand challenges, an even bigger umbrella concept than CE, does not lose its distinctiveness and become so omnipotent that it covers everything and, therefore, nothing.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper.

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REFERENCES

Adams, R.J., Jeanrenaud, S., Bessant, J., Denyer, D. & Overy, P. (2016). Sustainability-oriented innovation: a systematic review. *International Journal of Management Reviews*, 18, pp. 180–205.

Alonso-Almeida, M.D., Rodriguez-Anton, J.M., Bagur-Femenias, L. & Perramon, J. (2020). Sustainable development and circular economy: the role of institutional promotion on circular consumption and market competitiveness from a multistakeholder engagement approach. *Business Strategy and the Environment*, 26, pp. 2803–2814.

Alvesson, M. & Blom, M. (2021). The hegemonic ambiguity of big concepts in organization studies. *Human Relations*, 75, pp. 58–86.

Alvesson, M., Hardy, C. & Harley, B. (2008). Reflecting on reflexivity: reflexive textual practices in organization and management theory. *Journal of Management Studies*, 45, pp. 480–501.

Alvesson, M. & Sandberg, J. (2011). Generating research questions through problematization. *Academy of Management Review*, 36, pp. 247–271.

Alvesson, M. & Sandberg, J. (2020). The problematizing review: a counterpoint to Elsbach and Van Knippenberg's argument for integrative reviews. *Journal of Management Studies*, 57, pp. 1290–1304.

Andersen, M.S. (2007). An introductory note on the environmental economics of the circular economy. *Sustainability Science*, 2, pp. 133–140.

Appelgren, S. (2019). History as business: changing dynamics of retailing in Gothenburg's second-hand market. *Business History*, 61, pp. 172–186.

Audebrand, L.K. (2010). Sustainability in strategic management education: the quest for new root metaphors. *Academy of Management Learning & Education*, 9, pp. 413–428.

Awan, U., Gölgeci, I., Makhmadshoev, D. & Mishra, N. (2022). Industry 4.0 and circular economy in an era of global value chains: what have we learned and what is still to be explored? *Journal of Cleaner Production*, 371, art. 133621.

Banerjee, B. (2020). Modern slavery is an enabling condition of global neoliberal capitalism: commentary on modern slavery in business. *Business & Society*, 60, pp. 415–419.

Barreiro-Gen, M. & Lozano, R. (2020). How circular is the circular economy? Analysing the implementation of circular economy in organisations. *Business Strategy and the Environment*, 29, pp. 3484–3494.

Bartel, C.A. & Garud, R. (2003). Narrative knowledge in action: adaptive abduction as a mechanism for knowledge creation and exchange in organizations. In Easterby-Smith, M. & Lyles, M.A. (Eds.) *The Blackwell Handbook of Organizational Learning and Knowledge Management*. Oxford: Blackwell, pp. 324–342.

Benford, R.D. & Snow, D.A. (2000). Framing processes and social movements: an overview and assessment. *Annual Review of Sociology*, 26, pp. 611–639.

Blomsma, F. & Brennan, G. (2017). The emergence of circular economy: a new framing around prolonging resource productivity. *Journal of Industrial Ecology*, 21, pp. 603–614.

Bocken, N.M.P., De Pauw, I., Bakker, C. & Van Der Grinten, B. (2016). Product design and business model strategies for a circular economy. *Journal of Industrial and Production Engineering*, 33, pp. 308–320.

Bocken, N.M.P., Schuit, C.S.C. & Kraaijenhagen, C. (2018). Experimenting with a circular business model: lessons from eight cases. *Environmental Innovation and Societal Transitions*, 28, pp. 79–95.

Boons, F. (1998). Caught in the web: the dual nature of networks and its consequences. *Business Strategy & the Environment*, 7, pp. 204–212.

Boons, F. (2021). From business models to modes of provision: framing sustainable consumption and production. *Sustainable Consumption and Production*, II, pp. 17–33.

Brammer, S., Branicki, L., Linnenluecke, M. & Smith, T. (2019). Grand challenges in management research: attributes, achievements, and advancement. *Australian Journal of Management*, 44, pp. 517–533.

Brown, P.J. & Bajada, C. (2018). An economic model of circular supply network dynamics: toward an understanding of performance measurement in the context of multiple stakeholders. *Business Strategy and the Environment*, 27, pp. 643–655.

Bundgaard, A.M. & Huulgaard, R.D. (2019). Luxury products for the circular economy? A case study of Bang & Olufsen. *Business Strategy and the Environment*, 28, pp. 699–709.

Burger, M., Stavropoulos, S., Ramkumar, S., Dufourmont, J. & Van Oort, F. (2019). The heterogeneous skill-base of circular economy employment. *Research Policy*, 48, pp. 248–261.

Cainelli, G., D'Amato, A. & Mazzanti, M. (2020). Resource efficient eco-innovations for a circular economy: evidence from EU firms. *Research Policy*, 49, art. 103827.

Calisto Friant, M., Vermeulen, W.J.V. & Salomone, R. (2020). A typology of circular economy discourses: navigating the diverse visions of a contested paradigm. *Resources, Conservation and Recycling*, 161, art. 104917.

Centobelli, P., Cerchione, R., Chiaroni, D., Del Vecchio, P. & Urbinati, A. (2020). Designing business models in circular economy: a systematic literature review and research agenda. *Business Strategy and the Environment*, 29, pp. 1734–1749.

Chakrabarti, K., Dahiya, B., Gual, C., Jørgensen, T., Ogbuigwe, A., Okitasari, M. et al. (2018). Introduction - Sharing and Building on Expertise for the Goals: GUNi's Group of Experts in SDGs and Higher Education. In Vilalta, J.M., Betts, A., Gómez, V. & Cayetano, M. (Eds.). Approaches to SDG 17 partnerships for the sustainable development goals (SDGs), Barcelona: Global University Network for Innovation, pp. 11–14.

Chen, L.H., Hung, P.Y. & Ma, H.W. (2020). Integrating circular business models and development tools in the circular economy transition process: a firm-level framework. *Business Strategy and the Environment*, 29, pp. 1887–1898.

Ciulli, F., Kolk, A. & Boe-Lillegraven, S. (2019). Circularity brokers: digital platform organizations and waste recovery in food supply chains. *Journal of Business Ethics*, 167, pp. 299–331.

Coffey, B., & Marston, G. (2013). How neoliberalism and ecological modernization shaped environmental policy in Australia. *Journal of Environmental Policy & Planning*, 15, pp. 179–199.

Confente, I., Scarpi, D. & Russo, I. (2020). Marketing a new generation of bio-plastics products for a circular economy: the role of green self-identity, self-congruity, and perceived value. *Journal of Business Research*, 112, pp. 431–439.

Cornelissen, J.P. & Werner, M.D. (2014). Putting framing in perspective: a review of framing and frame analysis across the management and organizational literature. *The Academy of Management Annals*, 8, pp. 181–235.

Corvellec, H. (2019). Waste as scats: for an organizational engagement with waste. *Organization*, 26, pp. 217–235.

Corvellec, H., Böhm, S., Stowell, A. & Valenzuela, F. (2020). Introduction to the special issue on the contested realities of the circular economy. *Culture and Organization*, 26, pp. 97–102.

Corvellec, H. & Stål, H.I. (2019). Qualification as corporate activism: how Swedish apparel retailers attach circular fashion qualities to take-back systems. *Scandinavian Journal of Management*, 35, art. 101046.

Corvellec, H., Stowell, A.F. & Johansson, N. (2021). Critiques of the circular economy. *Journal of Industrial Ecology*, 26, pp. 421–432.

Cramer, J.M. (2020). Implementing the circular economy in the Amsterdam metropolitan area: the interplay between market actors mediated by transition brokers. *Business Strategy and the Environment*, 29, pp. 2857–2870.

D'Adamo, I., Gastaldi, M. & Rosa, P. (2020). Recycling of end-of-life vehicles: assessing trends and performances in Europe. *Technological Forecasting and Social Change*, 152, art. 119887.

D'Amato, D., Droste, N., Winkler, K.J. & Toppinen, A. (2019). Thinking green, circular or bio: eliciting researchers' perspectives on a sustainable economy with Q method. *Journal of Cleaner Production*, 230, pp. 460–476.

De Bakker, F.G.A., Matten, D., Spence, L.J. & Wickert, C. (2020). The elephant in the room: the nascent research agenda on corporations, social responsibility, and capitalism. *Business & Society*, 59, pp. 1295–1302.

De Giacomo, M.R. & Bleischwitz, R. (2020). Business models for environmental sustainability: contemporary shortcomings and some perspectives. *Business Strategy and the Environment*, 29, pp. 3352–3369.

De Los Rios, I.C. & Charnley, F.J. (2017). Skills and capabilities for a sustainable and circular economy: the changing role of design. *Journal of Cleaner Production*, 160, pp. 109–122.

Demirel, P. & Danisman, G.O. (2019). Eco-innovation and firm growth in the circular economy: evidence from European small- and medium-sized enterprises. *Business Strategy and the Environment*, 28, pp. 1608–1618.

Despeisse, M., Baumers, M., Brown, P., Charnley, F., Ford, S.J., Garmulewicz, A. et al. (2017). Unlocking value for a circular economy through 3D printing: a research agenda. *Technological Forecasting and Social Change*, 115, pp. 75–84.

Dey, P.K., Malesios, C., De, D., Budhwar, P., Chowdhury, S. & Cheffi, W. (2019). Circular economy to enhance sustainability of small and medium-sized enterprises. *Business Strategy and the Environment*, 29, pp. 2145–2169.

Dryzek, J. 2005. *The politics of the earth: environmental discourses*, Oxford: Oxford University Press.

Dryzek, J.S. (2013). *The Politics of the Earth: Environmental Discourses*. Oxford: Oxford University Press.

Duarte, C.M. (2014). Global change and the future ocean: a grand challenge for marine sciences. *Frontiers in Marine Science*, 1, art. 63.

Dubois, A. & Gadde, L.-E. (2002). Systematic combining: an abductive approach to case research. *Journal of Business Research*, 55, pp. 553–560.

Dzhengiz, T., Miller, E., Ovaska, J. P., & Patala, S. (2021). Framing Circular Economy: A Problematizing Review of the Assumptions. In *Academy of Management Proceedings* (Vol. 2021, No. 1, p. 10713). Briarcliff Manor, NY 10510: Academy of Management.

Elia, V., Gnoni, M.G. & Tornese, F. (2017). Measuring circular economy strategies through index methods: a critical analysis. *Journal of Cleaner Production*, 142, pp. 2741–2751.

Entman, R.M. (1993). Framing: towards clarification of a fractured paradigm. In McQuail, D. (Ed.) McQuail's *Reader in Mass Communication Theory*. Thousand Oaks, CA: SAGE, pp. 390–397.

Ergene, S., Banerjee, S.B. & Hoffman, A.J. (2020). (Un)sustainability and organization studies: towards a radical engagement. *Organization Studies*, 42, pp. 1319–1335.

Esposito, M., Tse, T. & Soufani, K. (2018). Introducing a circular economy: new thinking with new managerial and policy implications. *California Management Review*, 60, pp. 5–19.

Ethirajan, M., Arasu, T., Kandasamy, K., Vimal, K.E.K., Nadeem, S.P. & Kumar, A. (2020). Analysing the risks of adopting circular economy initiatives in manufacturing supply chains. *Business Strategy and the Environment*, 30, pp. 204–236.

Farooque, M., Zhang, A., Thürer, M., Qu, T. & Huisingh, D. (2019). Circular supply chain management: a definition and structured literature review. *Journal of Cleaner Production*, 228, pp. 882–900.

Ferasso, M., Beliaeva, T., Kraus, S., Clauss, T. & Ribeiro-Soriano, D. (2019). Circular economy business models: the state of research and avenues ahead. *Business Strategy and the Environment*, 29, pp. 3006–3024.

Figge, F. & Thorpe, A.S. (2019). The symbiotic rebound effect in the circular economy. *Ecological Economics*, 163, pp. 61–69.

Fisher, M. (2009). *Capitalist realism: Is there no alternative?*. John Hunt Publishing.

Frei, R., Jack, L. & Krzyzaniak, S.A. (2020). Sustainable reverse supply chains and circular economy in multichannel retail returns. *Business Strategy and the Environment*, 29, pp. 1925–1940.

Frishammar, J. & Parida, V. (2019). Circular business model transformation: a roadmap for incumbent firms. *California Management Review*, 61, pp. 5–29.

Garcia-Quevedo, J., Jove-Llopis, E. & Martinez-Ros, E. (2019). Barriers to the circular economy in European small and medium-sized firms. *Business Strategy and the Environment*, 29, pp. 2450–2464.

Garmulewicz, A., Holweg, M., Veldhuis, H. & Yang, A. (2018). Disruptive technology as an enabler of the circular economy: what potential does 3D printing hold? *California Management Review*, 60, pp. 112–132.

Geisendorf, S. & Pietrulla, F. (2018). The circular economy and circular economic concepts—a literature analysis and redefinition. *Thunderbird International Business Review*, 60, pp. 771–782.

Geissdoerfer, M., Savaget, P., Bocken, N.M.P. & Hultink, E.J. (2017). The circular economy – a new sustainability paradigm? *Journal of Cleaner Production*, 143, pp. 757–768.

Genovese, A., Acquaye, A.A., Figueroa, A. & Koh, S.C.L. (2017). Sustainable supply chain management and the transition towards a circular economy: evidence and some applications. *Omega-International Journal of Management Science*, 66, pp. 344–357.

Geyer, R., Kuczenski, B., Zink, T. & Henderson, A. (2016). Common misconceptions about recycling. *Journal of Industrial Ecology*, 20, pp. 1010–1017.

Ghisellini, P., Cialani, C. & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, 114, pp. 11–32.

Gond, J.-P., Mena, S. & Mosonyi, S. (2020). The performativity of literature reviewing: constituting the corporate social responsibility literature through re-presentation and intervention. *Organizational Research Methods*, https://doi.org/10.1177/1094428120935494.

Govindan, K. & Hasanagic, M. (2018). A systematic review on drivers, barriers, and practices towards circular economy: a supply chain perspective. *International Journal of Production Research*, 56, pp. 278–311.

Guldmann, E. & Huulgaard, R.D. (2020). Barriers to circular business model innovation: a multiple-case study. *Journal of Cleaner Production*, 243, art. 118160.

Gupta, S., Chen, H.Z., Hazen, B.T., Kaur, S. & Gonzalez, E. (2019). Circular economy and big data analytics: a stakeholder perspective. *Technological Forecasting and Social Change*, 144, pp. 466–474.

Haas, W., Krausmann, F., Wiedenhofer, D. & Heinz, M. (2015). How circular is the global economy? An assessment of material flows, waste production, and recycling in the European Union and the world in 2005. *Journal of Industrial Ecology*, 19, pp. 765–777.

Hansen, K.T. & Le Zotte, J. (2019). Changing secondhand economies. *Business History*, 61, pp. 1–16.

Hart, J. & Pomponi, F. (2021). A circular economy: where will it take us? *Circular Economy and Sustainability*, 1, pp. 127–141.

Hazen, B.T., Mollenkopf, D.A. & Wang, Y.C. (2017). Remanufacturing for the circular economy: an examination of consumer switching behavior. *Business Strategy and the Environment*, 26, pp. 451–464.

Hervieux, C. & Voltan, A. (2016). Framing social problems in social entrepreneurship. *Journal of Business Ethics*, 151, pp. 279–293.

Hobson, K. & Lynch, N. (2016). Diversifying and de-growing the circular economy: radical social transformation in a resource-scarce world. *Futures*, 82, pp. 15–25.

Hofmann, F. (2019). Circular business models: business approach as driver or obstructer of sustainability transitions? *Journal of Cleaner Production*, 224, pp. 361–374.

Hofmann, F. & Jaeger-Erben, M. (2020). Organizational transition management of circular business model innovations. *Business Strategy and the Environment*, 29, pp. 2770–2788.

Hofstetter, J.S., De Marchi, V., Sarkis, J., Govindan, K., Klassen, R., Ometto, A.R. et al. (2021). From sustainable global value chains to circular economy—different silos, different perspectives, but many opportunities to build bridges. *Circular Economy and Sustainability*, 1, pp. 21–47.

Hopkinson, P., Zils, M., Hawkins, P. & Roper, S. (2018). Managing a complex global circular economy business model: opportunities and challenges. *California Management Review*, 60, pp. 71–94.

Howard-Grenville, J., Davis, G.F., Dyllick, T., Miller, C.C., Thau, S. & Tsui, A.S. (2019). Sustainable development for a better world: contributions of leadership, management, and organizations. *Academy of Management Discoveries*, 5, pp. 355–366.

Jabbour, C.J.C., Jabbour, A., Sarkis, J. & Godinho, M. (2019). Unlocking the circular economy through new business models based on large-scale data: an integrative framework and research agenda. *Technological Forecasting and Social Change*, 144, pp. 546–552.

Jones, P. & Wynn, M.G. (2019). The circular economy, natural capital and resilience in tourism and hospitality. *International Journal of Contemporary Hospitality Management*, 31, pp. 2544–2563.

Katz-Gerro, T. & Sintas, J.L. (2019). Mapping circular economy activities in the European Union: patterns of implementation and their correlates in small and medium-sized enterprises. *Business Strategy and the Environment*, 28, pp. 485–496.

Khan, O., Daddi, T. & Iraldo, F. (2020a). Microfoundations of dynamic capabilities: insights from circular economy business cases. *Business Strategy and the Environment*, 29, pp. 1479–1493.

Khan, O., Daddi, T. & Iraldo, F. (2020b). The role of dynamic capabilities in circular economy implementation and performance of companies. *Corporate Social Responsibility and Environmental Management*, 27, pp. 3018–3033.

Kirchherr, J., Reike, D. & Hekkert, M. (2017). Conceptualizing the circular economy: an analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, pp. 221–232.

Kirchherr, J. & Van Santen, R. (2019). Research on the circular economy: a critique of the field. *Resources, Conservation and Recycling*, 151, art. 104480.

Kjaer, L.L., Pigosso, D.C., Niero, M., Bech, N.M. & McAloone, T.C. (2019). Product/service-systems for a circular economy: the route to decoupling economic growth from resource consumption? *Journal of Industrial Ecology*, 23, pp. 22–35.

Korhonen, J. (2003). On the ethics of corporate social responsibility – considering the paradigm of industrial metabolism. *Journal of Business Ethics*, 48, pp. 301–315.

Korhonen, J., Honkasalo, A. & Seppälä, J. (2018a). Circular economy: the concept and its limitations. *Ecological Economics*, 143, pp. 37–46.

Korhonen, J., Nuur, C., Feldmann, A. & Birkie, S.E. (2018b). Circular economy as an essentially contested concept. *Journal of Cleaner Production*, 175, pp. 544–552.

Kristensen, H.S. & Mosgaard, M.A. (2020). A review of micro level indicators for a circular economy – moving away from the three dimensions of sustainability? *Journal of Cleaner Production*, 243, art. 118531.

Kunz, N., Mayers, K. & Van Wassenhove, L.N. (2018). Stakeholder views on extended producer responsibility and the circular economy. *California Management Review*, 60, pp. 45–70.

Kwon, W., Balogun, J. & Vaara, E. (2014). Strategic change: a dynamic perspective on framing strategic initiatives. *Academy of Management Proceedings*, 2014, p. 12567.

Lazarevic, D. & Valve, H. (2020). Niche politics: biogas, technological flexibility and the economisation of resource recovery. *Environmental Innovation and Societal Transitions*, 35, pp. 45–59.

Lee Mudge, S. (2008). The state of the art: what is neo-liberalism? *Socio-Economic Review*, 6, pp. 703–731.

Lewandowski, M. (2016). Designing the business models for circular economy—towards the conceptual framework. *Sustainability*, 8, art. 43.

Lieder, M. & Rashid, A. (2016). Towards circular economy implementation: a comprehensive review in context of manufacturing industry. *Journal of Cleaner Production*, 115, pp. 36–51.

Linder, M. & Williander, M. (2017). Circular business model innovation: inherent uncertainties. *Business Strategy and the Environment*, 26, pp. 182–196.

Lovins, A.B., Lovins, L.H. & Hawken, P. (1999). A road map for natural capitalism. *Harvard Business Review*, 77, pp. 145–158.

Lüdeke-Freund, F., Gold, S. & Bocken, N.M.P. (2018). A review and typology of circular economy business model patterns. *Journal of Industrial Ecology*, 23, pp. 36–61.

Manzhynski, S. & Figge, F. (2020). Coopetition for sustainability: between organizational benefit and societal good. *Business Strategy and the Environment*, 29, pp. 827–837.

Mathews, J.A., Tan, H. & Hu, M.-C. (2018). Moving to a circular economy in China: transforming industrial parks into eco-industrial parks. *California Management Review*, 60, pp. 157–181.

Mendoza, J.M.F., Sharmina, M., Gallego-Schmid, A., Heyes, G. & Azapagic, A. (2017). Integrating backcasting and eco-design for the circular economy: the BECE framework. *Journal of Industrial Ecology*, 21, pp. 526–544.

Merli, R., Preziosi, M. & Acampora, A. (2018). How do scholars approach the circular economy? A systematic literature review. *Journal of Cleaner Production*, 178, pp. 703–722.

Milne, M.J., Kearins, K. & Walton, S. (2016). Creating adventures in wonderland: the journey metaphor and environmental sustainability. *Organization*, 13, pp. 801–839.

Moktadir, M.A., Kumar, A., Ali, S.M., Paul, S.K., Sultana, R. & Rezaei, J. (2020). Critical success factors for a circular economy: implications for business strategy and the environment. *Business Strategy and the Environment*, 29, pp. 3611–3635.

Mol, A.P. & Sonnenfeld, D.A. (2000). *Ecological Modernisation Around the World: Perspectives and Critical Debates*. Hove: Psychology Press.

Morales, C.M.B. & Sossa, J.W.Z. (2020). Circular economy in Latin America: a systematic literature review. *Business Strategy and the Environment*, 29, pp. 2479–2497.

Morseletto, P. (2020). Targets for a circular economy. *Resources, Conservation and Recycling*, 153, art. 104553.

Murray, A., Skene, K. & Haynes, K. (2017). The circular economy: an interdisciplinary exploration of the concept and application in a global context. *Journal of Business Ethics*, 140, pp. 369–380.

Norris, L. (2019). Urban prototypes: growing local circular cloth economies. *Business History*, 61, pp. 205–224.

Nyberg, D. & Wright, C. (2020). Climate-proofing management research. *Academy of Management Perspectives*, 36, pp. 713–728.

Ostrom, E. (2003). How types of goods and property rights jointly affect collective action. *Journal of Theoretical Politics*, 15, pp. 239–270.

Ostrom, E. (2010). Beyond markets and states: polycentric governance of complex economic systems. *Transnational Corporations Review*, 2, pp. 1–12.

Parida, V., Burstrom, T., Visnjic, I. & Wincent, J. (2019). Orchestrating industrial ecosystem in circular economy: a two-stage transformation model for large manufacturing companies. *Journal of Business Research*, 101, pp. 715–725.

Pazienza, P. & De Lucia, C. (2020). The EU policy for a plastic economy: reflections on a sectoral implementation strategy. *Business Strategy and the Environment*, 29, pp. 779–788.

Perey, R., Benn, S., Agarwal, R. & Edwards, M. (2018). The place of waste: changing business value for the circular economy. *Business Strategy and the Environment*, 27, pp. 631–642.

Pieroni, M.P.P., McAloone, T.C. & Pigosso, D.C.A. (2019). Business model innovation for circular economy and sustainability: a review of approaches. *Journal of Cleaner Production*, 215, pp. 198–216.

Pin, X. & Hutao, Y. (2007). Re-reading steady-state economy: calm thinking on hot circular economy. *China Population, Resources and Environment*, 17, pp. 20–23.

Prieto-Sandoval, V., Jaca, C. & Ormazabal, M. (2018a). Towards a consensus on the circular economy. *Journal of Cleaner Production*, 179, pp. 605–615.

Prieto-Sandoval, V., Ormazabal, M., Jaca, C. & Viles, E. (2018b). Key elements in assessing circular economy implementation in small and medium-sized enterprises. *Business Strategy and the Environment*, 27, pp. 1525–1534.

Rajala, R., Hakanen, E., Mattila, J., Seppälä, T. & Westerlund, M. (2018). How do intelligent goods shape closed-loop systems? *California Management Review*, 60, pp. 20–44.

Ranta, V., Aarikka-Stenroos, L. & Mäkinen, S.J. (2018). Creating value in the circular economy: a structured multiple-case analysis of business models. *Journal of Cleaner Production*, 201, pp. 988–1000.

Ranta, V., Keranen, J. & Aarikka-Stenroos, L. (2020). How B2B suppliers articulate customer value propositions in the circular economy: four innovation-driven value creation logics. *Industrial Marketing Management*, 87, pp. 291–305.

Reike, D., Vermeulen, W.J.V. & Witjes, S. (2018). The circular economy: new or refurbished as CE 3.0? Exploring controversies in the conceptualization of the circular economy through a focus on history and resource value retention options. *Resources, Conservation and Recycling*, 135, pp. 246–264.

Ripple, W.J., Wolf, C., Newsome, T.M., Galetti, M., Alamgir, M., Crist, E. et al. (2017). World scientists' warning to humanity: a second notice. *Bioscience*, 67, pp. 1026–1028.

Ritala, P. & Almpanopoulou, A. (2017). In defense of 'eco' in innovation ecosystem. *Technovation*, 60–61, pp. 39–42.

Rizos, V., Behrens, A., Van Der Gaast, W., Hofman, E., Ioannou, A., Kafyeke, T. et al. (2016). Implementation of circular economy business models by small and medium-sized enterprises (SMEs): barriers and enablers. *Sustainability*, 8, art. 1212.

Rodriguez-Anton, J.M., Rubio-Andrada, L., Celemín-Pedroche, M.S. & Alonso-Almeida, M.D.M. (2019). Analysis of the relations between circular economy and sustainable development goals. *International Journal of Sustainable Development & World Ecology*, 26, pp. 708–720.

Romero-Hernández, O. & Romero, S. (2018). Maximizing the value of waste: from waste management to the circular economy. *Thunderbird International Business Review*, 60, pp. 757–764.

Saldana, J. (2009). *The Coding Manual for Qualitative Researchers*. London: SAGE.

Salo, H.H., Suikkanen, J. & Nissinen, A. (2020). Eco-innovation motivations and ecodesign tool implementation in companies in the Nordic textile and information technology sectors. *Business Strategy and the Environment*, 29, pp. 2654–2667.

Salvador, R., Puglieri, F.N., Halog, A., De Andrade, F.G., Piekarski, C.M. & Antonio, C. (2021). Key aspects for designing business models for a circular bioeconomy. *Journal of Cleaner Production*, 278, art. 124341.

Sandberg, J. & Alvesson, M. (2010). Ways of constructing research questions: gap-spotting or problematization? *Organization*, 18, pp. 23–44.

Sarigöllü, E., Hou, C. & Ertz, M. (2020). Sustainable product disposal: consumer redistributing behaviors versus hoarding and throwing away. *Business Strategy and the Environment*, 30, pp. 340–356.

Sassanelli, C., Rosa, P., Rocca, R. & Terzi, S. (2019). Circular economy performance assessment methods: a systematic literature review. *Journal of Cleaner Production*, 229, pp. 440–453.

Sauvé, S., Bernard, S. & Sloan, P. (2016). Environmental sciences, sustainable development and circular economy: alternative concepts for trans-disciplinary research. *Environmental Development*, 17, pp. 48–56.

Scarpellini, S., Valero-Gil, J., Moneva, J.M. & Andreaus, M. (2020). Environmental management capabilities for a "circular eco-innovation". *Business Strategy and the Environment*, 29, pp. 1850–1864.

Schröder, P., Bengtsson, M., Cohen, M., Dewick, P., Hofstetter, J. & Sarkis, J. (2019). Degrowth within – aligning circular economy and strong sustainability narratives. *Resources, Conservation and Recycling*, 146, pp. 190–191.

Schroeder, P., Anggraeni, K. & Weber, U. (2018). The relevance of circular economy practices to the sustainable development goals. *Journal of Industrial Ecology*, 23, pp. 77–95.

Shao, J. (2019). Sustainable consumption in China: new trends and research interests. *Business Strategy and the Environment*, 28, pp. 1507–1517.

Shao, J., Huang, S., Lemus-Aguilar, I. & Nal, E. (2020). Circular business models generation for automobile remanufacturing industry in China: barriers and opportunities. *Journal of Manufacturing Technology Management*, 31, pp. 542–571.

Sorrell, S. & Dimitropoulos, J. (2008). The rebound effect: microeconomic definitions, limitations and extensions. *Ecological Economics*, 65, pp. 636–649.

Spring, M. & Araujo, L. (2017). Product biographies in servitization and the circular economy. *Industrial Marketing Management*, 60, pp. 126–137.

Stål, H.I. & Corvellec, H. (2018). A decoupling perspective on circular business model implementation: illustrations from Swedish apparel. *Journal of Cleaner Production*, 171, pp. 630–643.

Stål, H.I. & Corvellec, H. (2021). Organizing means–ends decoupling: core–compartment separations in fast fashion. *Business & Society*, 61, pp. 857–885.

Stewart, R. & Niero, M. (2018). Circular economy in corporate sustainability strategies: a review of corporate sustainability reports in the fast-moving consumer goods sector. *Business Strategy and the Environment*, 27, pp. 1005–1022.

Suárez-Eiroa, B., Fernández, E., Méndez-Martínez, G. & Soto-Oñate, D. (2019). Operational principles of circular economy for sustainable development: linking theory and practice. *Journal of Cleaner Production*, 214, pp. 952–961.

Suzanne, E., Absi, N. & Borodin, V. (2020). Towards circular economy in production planning: challenges and opportunities. *European Journal of Operational Research*, 287, pp. 168–190.

Testa, F., Iovino, R. & Iraldo, F. (2020). The circular economy and consumer behaviour: the mediating role of information seeking in buying circular packaging. *Business Strategy and the Environment*, 29, pp. 3435–3448.

Tranfield, D., Denyer, D. & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14, pp. 207–222.

Tukker, A. (2015). Product services for a resource-efficient and circular economy – a review. *Journal of Cleaner Production*, 97, pp. 76–91.

Tura, N., Hanski, J., Ahola, T., Ståhle, M., Piiparinen, S. & Valkokari, P. (2019). Unlocking circular business: a framework of barriers and drivers. *Journal of Cleaner Production*, 212, pp. 90–98.

Unterfrauner, E., Shao, J., Hofer, M. & Fabian, C.M. (2019). The environmental value and impact of the maker movement – insights from a cross-case analysis of European maker initiatives. *Business Strategy and the Environment*, 28, pp. 1518–1533.

Urbinati, A., Chiaroni, D. & Chiesa, V. (2017). Towards a new taxonomy of circular economy business models. *Journal of Cleaner Production*, 168, pp. 487–498.

Van Engeland, J., Belien, J., De Boeck, L. & De Jaeger, S. (2020). Literature review: strategic network optimization models in waste reverse supply chains. *Omega-International Journal of Management Science*, 91, art. 10212.

Van Loon, P., Delagarde, C. & Van Wassenhove, L.N. (2018). The role of second-hand markets in circular business: a simple model for leasing versus selling consumer products. *International Journal of Production Research*, 56, pp. 960–973.

Velenturf, A.P. & Purnell, P. (2021). Principles for a sustainable circular economy. *Sustainable Production and Consumption*, 27, pp. 1437–1457.

Vestergaard, A., Murphy, L., Morsing, M. & Langevang, T. (2019). Cross-sector partnerships as capitalism's new development agents: reconceiving impact as empowerment. *Business & Society*, 59, pp. 1339–1376.

Wastling, T., Charnley, F. & Moreno, M. (2018). Design for circular behaviour: considering users in a circular economy. *Sustainability*, 10, art. 1743.

Winans, K., Kendall, A. & Deng, H. (2017). The history and current applications of the circular economy concept. *Renewable and Sustainable Energy Reviews*, 68, pp. 825–833.

Witjes, S. & Lozano, R. (2016). Towards a more circular economy: proposing a framework linking sustainable public procurement and sustainable business models. *Resources, Conservation and Recycling*, 112, pp. 37–44.

Wohlgezogen, F., Osegowitsch, T., McCabe, A. & Mol, J. (2021). Challenging disciplinary norms in management research to catalyze climate action. *Academy of Management Perspectives*, 36, pp. 955–961.

Yazan, D.M., Yazdanpanah, V. & Fraccascia, L. (2020). Learning strategic cooperative behavior in industrial symbiosis: a game-theoretic approach integrated with agent-based simulation. *Business Strategy and the Environment*, 29, pp. 2078–2091.

Zink, T. & Geyer, R. (2017). Circular economy rebound: circular economy rebound. *Journal of Industrial Ecology*, 21, pp. 593–602.

Zucchella, A. & Previtali, P. (2019). Circular business models for sustainable development: a "waste is food" restorative ecosystem. *Business Strategy and the Environment*, 28, pp. 274–285.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX 1: In-house assumptions and associated framings in CE literature

Assumption category	Specific assumption	Link to CE framings	Illustrative quote
CE and CS relationship	Decoupling resource use and growth	CE will allow economic growth without resource overuse (prognostic–predictive) and CE can reduce waste generation (prognostic–predictive)	'A true circular economy would demonstrate new concepts of system, economy, value, production, and consumption … leading to sustainable development of the economy, environment and … The ultimate objective of this approach would be to achieve the decoupling of economic growth from natural resource depletion and environmental degradation' (Murray et al., 2017, p. 373)
	Regeneration assumption	CE leads to regenerative systems (prognostic–predictive), ecological benefits of CE (motivational)	'In the same way, CE paradigm calls for contributions at all levels of the economic cycle collectively aimed at generating products that incorporate a regenerative and reusable design … The goal is to restore the natural balance by optimizing the yields, minimizing waste and providing value across the entire product and material lifecycle' (Gupta et al., 2019, p. 468)
	CE will preserve material values	CE will reduce resource scarcity (prognostic–predictive), linked economic and ecological benefits (motivational)	'Another prominent definition stems from the EU Action Plan for the Circular Economy: "In a circular economy the value of products and materials is maintained for as long as possible; waste and resource use are minimized, and resources are kept within the economy when a product has reached the end of its life, to be used again and again to create further value"' (Geisendorf & Pietrulla, 2018, p. 772)
	CE improves corporate sustainability	CE is a strategy to achieve corporate sustainability (prognostic–prescriptive); CE can solve all grand challenges (prognostic–predictive)	'The CE philosophy is evolving into an influential driving force behind sustainability, both in the literature and in practice (Hobson & Lynch, 2016; Stewart & Niero, 2018), and it has begun to be recognized as of great potential to help organizations achieve a breakthrough in sustainability performance' (Farooque et al., 2019, p. 883)
Business model focus	Business model transformation	Circular business models (prognostic–prescriptive)	'To arrive at such a regenerative economy, companies need to change the way they operate, and the adoption of circular business models (CBMs) is one means to do so' (Guldmann & Huulgaard, 2020, p. 1)
	Limited opportunities for change	CE currently seen as 'alternative' or 'trend' (diagnostic), change may be slow (prognostic–predictive)	'A worldwide trend is leading the international community to explore possible paths for the transition from Linear to Circular Economy (CE) business models' (Elia et al., 2017, p. 2741)
	Paradigm shift (CE BMs enable systems change)	Cultural and cognitive barriers to CE (diagnostic), utopian and dystopian views of CE (prognostic–predictive), systemic innovation (prognostic–prescriptive), rapid experimentation (prognostic–prescriptive)	'However, a "casual interpretation" of CE can lead practitioners to view it as a mere refreshing of recycling schemes and reverse supply chains rather than a true systemic change … CE requires a shift from current systems, rather than an "incremental twist" (Kirchherr et al., 2017). Kirchherr et al. (2017) suggest that the concept of CE is constructed on a set of R-principles (reduce, reuse, recycle, recover), in a systemic perspective, at all economic levels' (Stewart & Niero, 2018, p. 1006)

(Continues)

Assumption category	Specific assumption	Link to CE framings	Illustrative quote
Business-case thinking	Efficiency benefits	LE is an inefficient economic model (diagnostic), resource efficiency is a desired outcome of CE (motivational)	'The PSS literature shows that incorporating circular economy principles into business models can yield the highest possible resource efficiency' (Frishammar & Parida, 2019, p. 7)
	Innovation focus	Innovation is necessary for CE transition (prognostic–predictive)	'Our case studies indicate that CE requires technological innovation as well as management innovation' (Khan et al., 2020b, p. 1491)
	Technocentrism	Need for new technologies like blockchain (prognostic–prescriptive)	'The role of information technologies in the introduction of new CE business concepts is also highlighted in the empirical results. This observation is aligned with earlier research by Winans et al. (2017) who argue that information exchange plays a crucial role as a constraint to the success of CE initiatives' (Tura et al., 2019, p. 97)
	Business benefits through lifecycle thinking	CE will improve firm environmental performance (prognostic–predictive), extending material lifecycles through design (prognostic–prescriptive)	'From a design perspective, innovation managers need to address design for reuse and remanufacture to enable repeat sales and to use all product and material combinations to not only enhance but also protect future revenues' (Hopkinson et al., 2018, p. 85)
	Management practices and competencies are necessary	Need for new competencies, unlearning organizational routines, need for new resources (prognostic–prescriptive)	'Consequently, organizational members must unlearn the daily routines of the incumbent in order to build up transformative knowledge assets and expertise (arranging new spaces for CBM exploration' (Hofmann & Jaeger-Erben, 2020, p. 2783)–
Stakeholders	Consumers are essential to the CE transition	Perceived poor quality of CE products as a barrier (diagnostic), lack of attention to consumer and social benefits (diagnostic), circular business model success depends on customer acceptance (prognostic–predictive)	'While governmental regulations and industrial efforts are crucial for the development of a circular economy in supply chains, a fundamental requirement for the successful adoption of a circular economy rests on attitude changes throughout the whole society … The circular economy strategy requires that the whole system of human activity will be reformed, beginning with consumption activities' (Govindan & Hasanagic, 2018, p. 304)
	Partnerships are important	Cross-disciplinary and cross-functional collaborations (prognostic–prescriptive), supply chain transformation (prognostic–prescriptive)	'Furthermore, a company's efforts to reduce waste must contemplate changes in a broader ecosystem that includes consumers, local authorities, NGOs and other organizations. By partnering with an established player with more relevant experience, companies can shorten their learning curve and benefit from the expertise of organizations specialized in waste management' (Romero-Hernández & Romero, 2018, p. 762)
	The state needs to play a role in the CE transition	Need for legislation to enable CE (prognostic–prescriptive)	'The second most important factor is "strong legislation towards CE," which shows that strong legislation by the country's government is of paramount importance' (Moktadir et al., 2020, p. 17)

APPENDIX 2: Root metaphor assumptions and associated framings in CE literature

Assumption category	Specific assumption	Link to CE framings	Illustrative quote
Circularity	Circle/closed loop	Closing the circle of resource loops can bring environmental benefits (motivational)	'This closed loop approach works on the synergistic integration of production activities at different stages of a production cycle where waste or by-product of one level may be used as input material for the next level thereby minimizing waste and ensuring better usage of existing resources' (Gupta et al., 2019, p. 468)
	Vehicle metaphors (spaceship earth, boat at sea)	Natural resource depletion (diagnostic)	'Indeed, her boat, a finite and limited system, can be compared to the world: both need careful resource management to be able to pursue sustainability along the time' (Sassanelli et al., 2019, p. 441)
	CE is like biological systems	CE mimics natural ecosystems (prognostic–predictive)	'A CE encourages artificial processes and activities to mimic natural ones, hence seeking to make all processes circular … where no "disposable waste" is generated, and all outputs are inputs to other processes' (Salvador et al., 2021, p. 2)
Nature–industry relationship	Cradle-to-cradle thinking	CE creates material flows from 'cradle to cradle' via technical or biological material cycles (prognostic–predictive)	'With regard to recycling, the CE agenda raises the issue of quality of recycling, first introduced in the context of the Cradle to Cradle® (C2C) design framework, through the term "upcycling," which refers to the redesign of ingredients or additives so they improve the quality of materials with respect to maintaining or improving value in continuous loops' (Stewart & Niero, 2018, p. 1007)
	Waste as food	Using waste as 'food' will reduce natural resource use (prognostic–predictive), keeping resources circling (prognostic–prescriptive), industrial metabolism (prognostic–prescriptive)	'By increasing the longevity of products through better manufacturing and maintenance, the rate of replacement decreases, and so resource use is reduced. Thus the "waste-as-food concept", wherein unwanted outputs of one industrial process are used as raw materials in another industrial process, and the three Rs of Reduce, Reuse, and Recycle have become central to the concept of the Circular Economy' (Murray et al., 2017, p. 371)
Reframing waste	Waste as ambiguously positive or negative	Viewing waste as 'scats' sees both messiness and signs of life (prognostic–prescriptive)	'Likewise, whereas the Circular Economy analogy of a circle evokes endless perfection, the analogy of scats evokes disorienting messiness. A scatolic approach features waste as a lively matter open for interpretation, within organizations as well as across organizational species' (Corvellec, 2019, p. 219)
	Waste as impurity	Waste as a burden (diagnostic), problems from contaminated waste streams (diagnostic)	'All case organizations viewed waste in all its forms as a burden on their business activities and routines, and often as a burden on their clients' business activities and routines' (Perey et al., 2018, p. 635)
Transition towards CE	CE is a journey	CE transitions do not need to happen all at once but rather are 'journeys' (motivational)	'The Circularity Indicators Methodology is perhaps the most useful tool to support designers, and companies more broadly, to assess how well a product or company performs in the context of a CE allowing companies to estimate how advanced they are on their journey from linear to circular' (De Los Rios & Charnley, 2017, p. 110)

APPENDIX 3: Ideology assumptions and associated framings in CE literature

Assumption category	Specific assumption	Link to CE framings	Illustrative quote
Neo-liberalism	Growth	CE will bring economic benefits (motivational), need policies that support growth through CE (prognostic–prescriptive)	'… circular economy pushes the frontiers of environmental sustainability by emphasising the idea of transforming products in such a way that there are workable relationships between ecological systems and economic growth. This is achieved by creating a paradigm shift in the redesign of material flows based on long-term economic growth and innovation' (Genovese et al., 2017, p. 345)
	Market logic	Challenging to change business model to CE, financial barriers to CE (diagnostic), CE will decouple natural resource use from economic growth (prognostic–predictive), partnerships to allow division of labour, need for market incentives (prognostic–prescriptive), even weak sustainability in incumbents can have ecological benefits, economic benefits of CE, CE will create new jobs (motivational)	'Acting at the forefront may give companies a competitive edge, create new markets and demand for their products, and help them fulfil and foresee legislative environmental requirements' (Salo et al., 2020, p. 2)
	Consumption and ownership	Perception of CE products as low quality (diagnostic), problematic marketing culture (diagnostic), consumers need CE education (prognostic–prescriptive), service-based business models (prognostic–prescriptive)	'The responsibility for CE should not be left with manufacturing and operations managers. Marketing is very much needed to do its share, and it is a change in the culture of consumers (including business users) that should be the focus of marketers. There is no question that the industry has spent the better part of a century educating consumers that new is best' (Hopkinson et al., 2018, p. 91)
Ecological modernization	Triple bottom line	CE should aim to bring ecological, social and economic benefits (prognostic–prescriptive)	'In this phase, the guiding principle of the circular economy was to ensure alignment during transformation to achieve a triple-bottom-line effect consisting of financial, environmental, and social benefits. The common interpretation of the triple-bottom-line effect was the recognition that the new business model would need to create some benefits along all three dimensions (rather than solely focusing on economic benefits)' (Frishammar & Parida, 2019, p. 19)
	Environment as commodity/natural resource	Natural ecosystems are framed as resources that CE can help protect (motivational)	'[CE] is fundamentally rooted in the preservation and enhancement of the natural resources, circulation of materials and used products along with explicating the negative externalities for increasing the effectiveness of overall sustainable business' (Gupta et al., 2019, p. 466)
	Reliance on technological solutions	Technological solutions can decouple economic growth from natural resource use (motivational) and nature can be managed by humans (motivational)	'The way resources are currently managed must be improved to locate opportunities for greater wealth for individuals while retaining environmentally friendly practices … This transition is already ongoing, and one of its central views is the concept of a circular economy' (Govindan & Hasanagic, 2018, p. 278)