



Practising circles: Studying institutional change and circular economy practices

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ARTICLE INFO

Article history:

Received 22 January 2019

Received in revised form

18 July 2019

Accepted 22 July 2019

Available online 25 July 2019

Handling Editor: Charbel Jose Chiappetta Jabbour

Keywords:

Circular economy

Practice theory

Institutions

Methodological framework

Economic geography

ABSTRACT

Recent international and national policy initiatives promulgate the Circular Economy (CE) as the new central pathway towards sustainable modes of production and consumption. A growing number of commentators criticize the approach, despite its success in triggering discussions about product design (longevity, reparability) and about options for sharing goods and services. The criticism centers on the mere technological fix orientation of the CE approach and its ecological modernist idea of gradually adapting the current production system to material resource constraints - while leaving aside socio-political aspects of consumption as well as the possible need for sufficiency-oriented lifestyles. This paper argues for a broader understanding of CE and for the use of an institutional perspective inspired through practice theory, and presents a framework to assess the transformative potential of CE, encompassing its alternative/dissenting articulations in the noncorporate sector.

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1. Introduction

The concept of the Circular Economy (CE) has recently regained momentum and even reached mainstream discourses, in particular through new policy initiatives. For instance, the European Commission's efforts to re-focus its industrial and waste policies by applying a decidedly circular approach – the so-called EU circular economy package – have triggered a large variety of implementation strategies amongst the EU member states.

Some of these strategies are more proactive, as they trumpet CE as the crucial new principle of national or regional/local innovation policies (e.g. the Netherlands' government-wide CE programme, the British Standard Framework for CE (BS 8001:2017), Luxembourg with its “Third Industrial Revolution” and CE strategy, or the “Circular Glasgow” programme). Others are merely adapting to new regulations and related vocabulary. Germany for instance, perhaps resting on the laurels of its past achievements in waste recycling and management, standardised CE as early as 1996, in the

then pioneering *Kreislaufwirtschaftsgesetz*.¹ Similar initiatives in Japan (Heck, 2006; Murray et al., 2017) and China (Su et al., 2013; Geng et al., 2013), though different in scope and methods, have equally contributed to the uptake of CE amongst global business elites and international organisations.

These new CE dynamics have started resonating in the scholarly literature, including both engineering and natural science perspectives on the one hand, and social sciences perspectives on the other (see, for example, special issues and review articles in Bocken et al., 2014; Su et al., 2013; Tukker, 2015; Blomsma and Brennan, 2017; Sauvé et al., 2016; Merli et al., 2018; Kirchherr et al., 2017). An increasing part of the latter strand of literature critically comments on the hitherto substantial research focus on the technical, fiscal and managerial dimensions of CE implementation. Hobson, for example, states that “within prevailing CE debates, little has been said about the socio-political implications and possibilities for shifting current production-consumption-use-waste practices” (Hobson, 2016: 89). She pleads for the necessity to inquire into “the

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¹ Even though this name literally translates as Circular Economy Law, its approach focused rather on efficient collection of packaging waste and implementing plastics recycling schemes.

implications of a CE for quotidian spaces and practices, as the patterns and rhythms of everyday socio-materiality are potentially reconfigured.” (Hobson, 2016)

The general lack of consideration of socio-political aspects in CE research is frequently regretted (see overviews in Lewandowski, 2016; Merli et al., 2018). This apparent deficit bears several risks, as

- a) the CE concept tends to be seen as a mere technological and organisational approach, disregarding the sociocultural dimension of its implementation process;
- b) simultaneously, the role of possible power asymmetries, interdependencies and other political-economic constraints may be neglected or overlooked;
- c) current debates in the political realm show that the uptake of CE ideas by policymakers leads to the suggestive assumption that the current economic systems could become entirely sustainable by implementing CE principles of closed material and energy loops, regardless of the character of the product. This “technological fix” approach not only neglects the demand side of CE implementation but it also – at least implicitly – denies the need to question current consumption patterns, global inequalities and persisting negative externalities.

The last aspect is also prevalent in the discussion around the notions of efficiency and sufficiency. The former being the fundamental principle of “weak” ecological modernisation theory (Christoff, 1996), it is increasingly criticised for not having been able to instigate an absolute decoupling of material intensity and productivity, or, in more general terms, between global resource consumption and economic growth (Gibbs and O'Neill, 2017; Giljum and Lutter, 2015). Sufficiency-oriented approaches instead profoundly challenge the predominant growth paradigm, including the way we measure and evaluate economic development (Schulz and Bailey, 2014; Schneidewind and Zahrnt, 2014; Krueger et al., 2017).

In a similar vein, the CE related debates about new digital infrastructure facilitating new modes of product use and service provision – in particular, the most lauded articulations of the so-called sharing economy – are increasingly criticised for their often limited transformative potential regarding sustainability aspects (Martin, 2016; Belk, 2017).

Against the backdrop of this controversy, which is the subject of increasing discussion, our paper aims to apply a comprehensive understanding of CE that transcends narrow “green economy” (UNEP, 2011) or “sustainable growth” (European Commission, 2010) approaches. We therefore deliberately adopt a broad definition of “the economy”, that is, an understanding that goes beyond the private sector and its formal organisations (firms). It includes, for example, public authorities and organisations, community businesses, and various forms of the social and solidarity economy, as well as individuals and their lifestyles. In doing so, we are also able to assess hybrid organisations resulting from joint corporate, public and civil society commitment. This comprehensive approach purposely takes into account dissenting and to some extent more radical attempts to transform the economy towards circularity, e.g. collaborative and de-growth-oriented endeavours such as food sharing or co-housing initiatives.

To tackle this wide variety of approaches, we sought inspiration from social practice theory, which appears particularly appropriate for an inquiry into an emerging field such as CE. It is by identifying nascent practices, e.g. new shared patterns of everyday routines, perceptions and value judgments amongst individual actors, that we will try to assess the transformative impact of both higher-order CE policies in the corporate sector, as well as the impetus from individual firms, community initiatives and related social innovations.

The remainder of this paper unfolds as follows: section 2 outlines the conceptual framework of our approach, by building on the origins of social practice theory and its uptake by economic geographers. Section 3 provides an illustrative overview of the state-of-the-art literature on CE research in the social, natural and engineering sciences, and highlights evident omissions and research gaps. The discussion in section 4 deals with the operationalisation of the conceptual frameworks for the study of CE, including conceptual and methodological challenges. Finally, Section 5 concludes the discussion and provides an outlook on future research challenges.

The overall goal of the article is thus twofold, as it aims to develop a framework that a) recombines conceptual perspectives suitable for comprehending emerging CE practices, and b) shows methodological ways to operationalise and to empirically scrutinise pertinent aspects related to ongoing CE endeavours.

2. Conceptual perspectives

As indicated above, our framework aims to assess CE-oriented transitions beyond their technicalities and tangible outcomes (e.g. material flow monitoring, energy balance sheets, efficiency-related benefits). Thus we choose to focus on the underlying social processes that constitute actors' behaviour and that potentially contribute to or prevent routines from changing. In studying both corporate firms and (non-profit) community enterprises, we try to cover a vast array of coexisting (and to some extent dissenting) approaches to circularity.

2.1. Practice theory

Following the pledge made by critical commentators of sustainability transition research to place greater emphasis on the actual social practices (Shove and Walker, 2007, 2010; Barr, 2016), we argue that transformation processes – such as the transition towards a CE – are always rooted in changing individual perceptions and practices. Thus we focus on how business and community actors, through their behaviour, become part (or not) of new collective practices, that is changing routines in economic processes (Jones, 2008, 2014; Radwan and Kinder, 2013). According to Jones and Murphy (2011: 372), practices “constitute, reproduce, or transform structural forms (e.g. production systems, institutions, communities, livelihood patterns, networks, markets, power structures).” Although shared practices stabilise structures, they are simultaneously subject to change and are constantly challenged, as

“the 'breaking' and 'shifting' of structures must take place in everyday crises of routines, in constellations of interpretative inter-determinacy and of the inadequacy of knowledge with which the agent, carrying out a practice, is confronted in the face of a 'situation'.” (Reckwitz, 2002: 255).

By changing their routines (and related norms and value systems), agents (e.g. corporate actors) provide new interpretations of ‘good’ practices – often somewhat unintentionally – and thus establish new institutions (‘rules of the game’), influencing their peers and other stakeholders. Simultaneously, corporate actors are not isolated from their social environment; they are interacting – professionally or privately – with very different people whose standpoints, mindsets, interests or strategies may affect their behaviour. As outlined by Peter North, this applies particularly to owners of small and medium-sized enterprises (SMEs), since they are often “reliant on personal relationships which make them open to influences beyond the bottom line from communities, NGOs and other local stakeholders” (North, 2015: 12). Also, individual

entrepreneurs can have a catalytic influence on their peers, as they can “validate previously unfamiliar information, technologies and processes to other SME owners, people similar to themselves, and help diffuse processes of socio-technical change more broadly” (North and Nurse, 2014: 33). Here, so-called ‘green entrepreneurs’ or ‘ecopreneurs’ who

“combine environmental awareness with entrepreneurial action may be in the vanguard of a shift to a new form of capitalist development directly helping to address climate change and therefore will be instrumental in any move or transition towards a green or low-carbon economy.” (O’Neill and Gibbs, 2014: 573).

Consequently, practice is more than the activity of an individual or organisation. It implies collectivity and coexistence of people/organisations as well as recognisable and repeated patterns of interdependent elements. Andreas Reckwitz, one of the central proponents of practice theory, defines a practice as

“a routinized type of behavior which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, ‘things’ and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge.” (Reckwitz, 2002: 249).

Applied to the CE context, this includes the everyday practices of corporate and community actors (bodily activities), their self-understanding and attitude in running their business (mental activities), the production infrastructure and logistics they use (things), and the respective know-how for successfully combining these elements (background knowledge). As for the material dimension (things), Shove et al. (2015) emphasise that infrastructure is not only the result of social practices but is highly interdependent with them (e.g. road networks and car use). Moreover, specific types of infrastructure may serve different uses and thus, different types of social practices. Regarding CE implementation, we will have to take into account this material dimension, in particular in terms of how and to what extent production infrastructure, energy provision, trade and logistics interfere with or predetermine social practices.

In addition to Reckwitz’s heuristic and Shove’s claim for recognising the role of material infrastructure outlined above, our work is notably inspired by Theodore Schatzki’s understanding of practice as “an organised, open-ended spatiotemporal manifold of actions” (Schatzki, 2005: 471). These actions comprise a practice by a) understandings of how to do things, b) rules, and c) teleoaffective structures – the latter defined as “an array of ends, projects, uses (of things), and even emotions that are acceptable or prescribed for participants in the practice” (Schatzki, 2005: 472). Together with the material components of action (people, organisms, artefacts, things) – arrangements, in Schatzki’s terminology – these actions form *practice-arrangement bundles*. According to Schatzki, “the site of the social is composed of nexuses of practices and material arrangements” (2005: 471). Embedded in a spatial/material context, these nexuses or practice-arrangement bundles thus form complex activity spaces.

Besides overcoming the dichotomy between ‘individualist’ and ‘societist’ accounts and their respective ontologies, Schatzki moreover conceptualises not only the social but also the spatial context of practices, by what he terms *site ontologies*. Here, a site is to be understood as both an ‘objective’ or ‘absolute space’ (place) and as an ‘arena’ “that surrounds or immerses something and enjoys powers of determination with respect to it” (Schatzki, 2005: 468). In other words (also Schatzki’s): “A site is inseparable from

that of which it is the site.” This notion of mutual co-constitution of context and practices prevents spatial determinism and is possibly one of the reasons why Schatzki’s inherently spatial conceptualisations of practice theory increasingly resonate in human geography, e.g. Schatzki’s notion of “interwoven timespaces” (Schatzki, 2015: 4). Nevertheless, the actual conceptualisations of space in practice theory approaches are rather conventional and tend to overlook (or to explore merely superficially) the long-standing and differentiated debates within human geography, such as on the articulations between place and space, time and space, or aspects of multiscalarity (Jones and Murphy, 2011; Jones, 2014).

Amongst the significant weaknesses and limitations in the current use of practice theory concerning economic activities, we find both methodological and epistemological challenges. Regarding the former, the study of complex social phenomena and the open, somewhat exploratory research design advocated in practice theory may quickly lead to an overwhelming demand for time-consuming research tools, e.g. observation, or incremental sampling of interviewees. In most cases, the funding and time resources available will require pragmatic decisions and compromises when defining the scope of a study.

From a more epistemological perspective, there is a particular risk that the still heterogeneous literature subsumed under the notion of practice theory inevitably leads to a high level of diversity in the use of the notion of practice. Current understandings range from a) rather purist and narrow definitions (e.g. Schatzki’s), through b) the use of practices as an umbrella term for approaches more or less inspired by praxeology, to c) a rather everyday use of the term ‘practice’, used interchangeably with ‘activity’ or behaviour. To put it more drastically: the diversity in the ‘practice’ of using practice theory might undermine the concept’s core assumptions and loosen its conceptual rigour.

Also, given the diversity of approaches and applications, we do not consider practice-related approaches in the social sciences to constitute one coherent theory or model. In our research, we decided neither to stick to one single strand of literature nor to use too broad an understanding of practices (e.g. in an everyday sense). Instead, and with explicit references to Schatzki, Shove, and Reckwitz particularly, we use the following terms and definitions:

- **Practices** go far beyond individual action or behaviour and are to be understood as the “doings and sayings” in a particular realm, shared by a larger group of actors. Perceivably they constitute an interplay and (potentially mutual) reinforcement between actual activities (doings) and the way how actors discursively present their actions or comments on others’ actions (e.g. when alleged best corporate practices are promulgated and imitated by other firms).
- Through that, they co-constitute **social institutions** (values, norms, habits, conventions, rules of the game) and have a substantial transformative power (e.g. in the changing of routines).
- The **material dimension** (infrastructure, tools, artefacts, people) is an integral part of the bundles mutually intertwining practices and material arrangements.
- Such **practice-arrangement bundles** can mesh/overlap, that is: their constituting elements (e.g. individual actors) can be part of different bundles.

All four aspects embrace a spatial dimension, as they can vary from context to context, and can themselves shape and constitute spatial relations and/or material, spatial outcomes (e.g. infrastructure, mobility patterns and material flows, environmental impacts).

As stated before, collective practices are not only stabilising routines and structures; they also bear a transformative potential as

fundamental changes (e.g. in a production system or a consumption pattern) start with and are triggered by changing practices. These can be slower or more disruptive. Moreover, they are, as outlined above and discussed in more detail in section 4, spatially embedded and context-sensitive. That is: changes in practices may emerge in a particular location and start impacting the relevant institutional setting while taking different trajectories in other contexts. The subsequent section, therefore, includes a more detailed discussion of the notion of institutions.

2.2. Institutions

In this section, we introduce our present understanding of *institutions* as we intend to use the term in our research on Circular Economy practices, acknowledging the interdependence between social practices and institutions. Over the last few decades, extensive discussion of the role of institutions for economic activities and regional development dynamics has taken place (Bathelt and Glückler, 2014; Hayter, 2004). Many scholars in the social sciences use an understanding of institutions that encompasses various types of formal and less formal rules. These rules range from codified regulatory instruments (laws, industrial norms) to far less tangible – but often similarly pertinent – routines, habits, social norms, cultural values and conventions structuring social life (Hodgson, 2007). The main exception to this is neo-institutional economics that mainly focuses on property rights and transaction costs from an organisational perspective (Williamson, 1981). Alternatively, in Douglass North's terms, the “rules of the game in a society” (North, 1990: 3). Rules can also be particular to a given field (e.g. the way of doing business in a specific industry), but they are never entirely isolated from or independent of other parts of social life, e.g. cultural values or beliefs. Institutions are thus constitutive elements of economic practices, can be place-specific, and are subject to change. As for the latter, the evolution of institutions can be induced coercively by changing formal regulations, policies, industry standards and jurisdiction. At the same time, institutions also result from social practices, defined by Johannes Glückler and Regina Lenz as “how the game is actually played” (Glückler and Lenz, 2016: 260). More conceptually speaking, institutions are the outcome of an interplay of upward and downward causation. They are not only a co-constituted result of regulatory coercion and actual social practices (see Fig. 1); simultaneously, they determine social practices and affect regulation and policymaking.

To illustrate this with an everyday example: the way takeaway

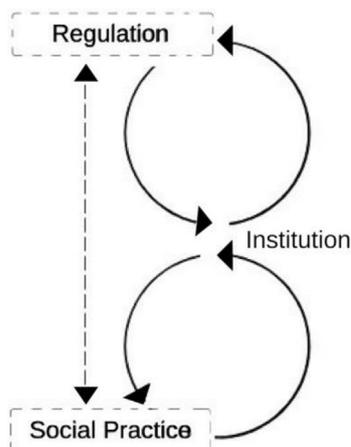


Fig. 1. The intermediate role of institutions in policymaking (adapted from Glückler and Lenz, 2016: 263).

coffee cups are currently used by many can be considered a social practice in many countries, that is: people tend to prefer disposable cups to bring-your-own-cup or deposit/refund schemes (where available). This prevailing practice is both *enabled* by an institutional system that does not (sufficiently) sanction throwaway systems and *constitutes* an institution in itself, as it established routines followed by many consumers. These routines may change through downward causation, e.g.

- prohibitive regulation by applying either softer (incentives, taxes) or harder (ban on disposable plastics) measures;
- changing consumer awareness and behaviour;
- alternatively, most likely, a combination of both, where b) triggers political action (>a)) else a) raises awareness and leads to adaptive behaviour (>b))

Referring back to practice theory: the coffee cup example illustrates both the material and the mental and knowledge dimensions of social practices introduced above. According to Schatzki, it is thus the “doings” (drinking coffee from disposable cups) and “sayings” (e.g. political, media and social discourses about throwaway cultures) that characterise a practice and show institutional implications, both in terms of causation and impact.

Concerning CE policies (see details in section 3), the institutional dimension seems to be primarily formal and regulatory. At first glance, at least, it is new laws, various kinds of incentives (including taxation and subsidies) and political pressure that may lead directly to changes in the practices and routines of firms. However, there is also some evidence that instruments other than formal ones determine the institutional context of emerging CE practices. These more subtle forms can be found, for instance, in changing consumer preferences (e.g. avoiding plastic waste) or in a growing interest in sufficiency-oriented lifestyles (e.g. the DIY and maker movement). Public authorities may also tend to be flexible in interpreting existing rules, e.g. when the police do not pursue people saving food from refuse bins, although this practice is formally illegal. Moreover, there may be corporate practices that – whether deliberately or not – tend to circumvent formal institutions or adapt only partially to new regulatory imperatives. These practices express how the game is actually played (see above).

3. Circular economy research – state of the art

This narrative review of the transdisciplinary discussion of Circular Economy serves to illustrate ongoing academic debates. We broadly limit our discussion to publications from the last two decades, covering the period when new CE policy initiatives rekindled academic interest in the field. We used several recently published systemic reviews focusing on different aspects of CE as a starting point (Ghisellini et al., 2016; Kirchherr et al., 2017; Lieder and Rashid, 2016; Bocken et al., 2014; Su et al., 2013; Tukker, 2015; Prieto-Sandoval et al., 2018; Geissdoerfer et al., 2017; Merli et al., 2018) and snowballing from there. We furthermore searched for papers published in 2018 and 2019, for new developments.

The current renaissance of the CE took off in 2003 (Geng et al., 2012), when the Chinese government instigated the promotion of CE as a solution to the country's many environmental problems, followed by the first CE law in 2009, the ‘Circular Economy Promotion Law of the People's Republic of China’ (Lieder and Rashid, 2016). In the EU, CE entered the agenda in 2011, with the ‘Roadmap to a Resource Efficient Europe’ (European Commission, 2011). The roadmap is one of the seven ‘Europe 2020’ flagship policies focusing on resource efficiency as a response to concerns regarding increasing risk and volatility of resource markets (Lieder and Rashid, 2016), as well as a supposed failure of sustainability

policies (Sauvé et al., 2016). In 2015, the EU followed with a wider circular economy strategy: 'Closing the loop' (European Commission, 2014). The link between policy discussion and the recent revival of academic interest in CE is evident in the publication records (Wu et al., 2014; Prieto-Sandoval et al., 2018). Lieder and Rashid (2016) thus find that in 2005–2012 most articles centre on China, while publications that focused on Europe or were geographically independent first took off in 2012. This trend was made stronger by publications from the Ellen MacArthur Foundation, established in 2009 and currently one of the strongest advocates of CE on the international stage (Sauvé et al., 2016).

3.1. Circular economy implementation

Regarding the implementation of CE policies, EU initiatives are currently among the most developed in the world (Domenech and Bahn-Walkowiak, 2017) and are taken up by governments at all levels (local, regional, national and EU levels), to support economic actors in changing to CE practices (Ellen MacArthur Foundation, 2013). Potential policies include a wide range of tools, and Andersen (2007) emphasises the fact that in the current economic system, important CE activities (e.g. recycling, extending product lifespan) might not be economically viable options and that policymakers need to decide which CE practices are socially desirable, and create economic incentives that favour these changes. This includes direct measures that impact the economic viability of different competing choices (e.g. the price ratio of raw, recycled or recovered materials), and laws and regulations that provide incentives or hinder certain activities (e.g. transport of waste materials for recycling, see, i.e. Sauvé et al., 2016), as well as indirect measures influencing patterns of 'production-consumption-use-waste practices' (Hobson, 2016).

Among the policy measures that are currently under development are tax systems, e.g. externality taxes (Andersen, 2007), better access to financing for CE practices (Dörny and Schulz, 2018) and strategic use of public procurement (Witjes and Lozano, 2016). However, firm-level implementation of CE practices is still limited (Ritzén and Sandström, 2017) and there is a gap in the literature regarding CE implementation (Chiappetta Jabbour et al., 2019) and the nature and scope of the relationship between policy (at any level) and CE practices. That is, to what extent (or even if) stakeholders develop CE practices as a response to these political imperatives and their formal institutions (e.g. adapted waste and recycling policies, or dedicated CE regulation put in place in many countries). We therefore support the view of Blomsma and Brennan (2017) regarding the need for more social science input in CE research.

Literature dealing with CE implementation within firms highlights several aspects of firm activities, including the development of CE business models (Van Renswoude et al., 2015), supply chains (Koh et al., 2017), the role of green human resource management (GHRM) (Chiappetta Jabbour et al., 2019) as well as how big data can support the measurement and development of CE practices (Singh and El-Kassar, 2019; De Camargo Fiorini et al., 2018).

3.2. Recycle, reuse and reduce

Our analysis of the CE literature shows that the most commonly discussed CE practices are the 3Rs: recycle, reuse and reduce, with 'recycle' being the most frequently mentioned (Ghisellini et al., 2016; Hobson, 2016; Merli et al., 2018). This emphasis on recycling is an indication of the technological and management focus of the CE discourse, where reforming practices and creating cyclical material streams, thus minimising the need for virgin materials, is a central concept (Hobson, 2016). The emphasis on recycling further

links to a focus on waste management policy (European Commission, 2011) and the lack of consensus regarding a definition for CE, with strands of the literature specifying CE as a waste and resource management frame (see; e.g. Blomsma and Brennan, 2017; Blomsma, 2018).

The term 'reuse' refers to the reuse of both components and whole products, and therefore also entails longer lifespans, and more frequent use of products, both by firms and by individual users (Figge et al., 2014). In a firm perspective, this relates for example to designing products for a longer lifespan, refurbishing for prolonged use, and shared use, and therefore to new business models (Bocken et al., 2014). From the perspective of consumers, reuse is, i.e. based on obtaining pre-used products, passing unused products to other users and by purchasing access to products rather than owning the product (for a comprehensive overview of users and reuse practices see Selvefors et al., 2019). The academic discussion has focused primarily on the business model side relating to 'reuse', while consumption practices and users' perspectives are not well represented, and even then mainly from a marketing point of view (Selvefors et al., 2019). There is thus a lack of understanding regarding consumer response to business models that accentuate reuse, including changes in values included in moving from ownership to access in different forms (Hobson, 2016).

The priority of a technological focus over a broader sociocultural change is also apparent in the low priority given to the principle of 'reduce', as the least-discussed of the 3R concepts (Kirchherr et al., 2017), and a peripheral approach mainly mentioned in theoretical discussion (Hobson, 2016; Su et al., 2013; Merli et al., 2018). In general, CE discussion in the literature refers to an adjusted or alternative capitalist model for economic growth rather than a new paradigm. Practitioners' literature and policy papers, in particular, emphasise cost savings, job creation and GDP growth alongside environmental benefits as arguments for the advantages of CE (Ellen MacArthur Foundation, 2013; European Commission, 2014). This win-win view that CE can both lead to significant environmental gains and economic growth simultaneously is met with scepticism by researchers who support the view that we need a new economic paradigm and a significant change in society if CE policy is to fare better than previous measures (Geels et al., 2015). While strands of the literature focus on firm activities and practices aiming at reducing the use of virgin materials and energy in firm activities (Geng et al., 2012), others, especially from the social sciences, focus on consumption patterns (Ghisellini et al., 2016). Here the debate relates to 'greener consumption,' e.g. to minimising input and waste through efficiency measures (prolonged lifetime, material efficiency, see, e.g. Lebel and Lorek, 2008), or the need for more fundamental changes in user patterns, including less consumption (Schor and White, 2010; Geels et al., 2015). These views coincide with a broad perspective of CE as a new sustainability paradigm that goes beyond the interaction between policy and firms practices, including other stakeholders such as public authorities, civil society, and other solidarity organisations and individuals.

3.3. Consumption and sharing

Approaches that advocate that a transformation to a CE involve a fundamental change in society and human activity (Yuan et al., 2006; Schröder et al., 2019) promote the need for a profound change of the economic model. The implementation of a successful new sustainability paradigm building on circularity would thus include de-growth and post-growth approaches (Kallis et al., 2012). In this literature, the 'reduce' principle extends the importance of less consumption, in the form of frugal consumption or sufficiency, and challenges the assumptions of the current model of economic

growth as the primary measure of welfare (Schulz and Bailey, 2014; Schneidewind and Zahrnt, 2014; Krueger et al., 2017).

Individuals, initiatives and hybrid organisations are progressively changing to habits of lower consumption, e.g. peer-to-peer sharing, community initiatives and sharing economy initiatives (Hamari et al., 2016; Martin, 2016), as well as cooperative economy (Geels et al., 2015), thus challenging the prevailing profit-based consumption models (Banbury et al., 2012; Kenney and Zysman, 2016). These initiatives include a myriad of schemes for sharing goods (e.g. carpooling, food sharing and toy libraries) and services (e.g. babysitting or repairs), cooperative production (e.g. community gardening or farming, upcycling of furniture and repair workshops), communal living and co-housing programmes (Jarvis, 2019), or energy initiatives producing renewable energy, energy communities and micro-grids (Klagge and Meister, 2018; Aiken, 2017). All these initiatives challenge the current 'production-consumption-use-waste practices' and highlight the need for further understanding of the transformation from linear to circular practices and of the interaction between firms and users (Hobson and Lynch, 2016; Selvefors et al., 2019), as well as of the relationship between institutions and social practices of firms and individuals. How these initiatives and hybrid organisations influence consumption patterns and social value systems in society as a whole, or even if their impact will remain in niche markets, is still unclear.

3.4. Business models

The link between the sharing economy and commercial firms is furthermore relevant in the literature dealing with how firms can develop their internal activities, including business models, human resource activities and use of data for monitoring. A growing strand of CE literature deals with business models where firms develop ways of delivering value to customers in new and innovative ways that supposedly can lead, for example, to decreased production and therefore less material use, longer product lifespan, and design for recycling (Van Renswoude et al., 2015). These CE business plans can e.g. include new types of products or delivery systems using ICT (De Camargo Fiorini et al., 2018) or depend on a Product Service System (PSS) (de Abreu and Ceglia, 2018; Tukker, 2015) and focus on energy efficiency, supply chain development (Koh et al., 2017) or create value from waste (Bocken et al., 2014; Brehmer et al., 2018). Changing from a business model based on delivering customer value through the sale of a product to delivering value by providing a service that meets customer needs (e.g. transport, gardening or cleanliness) involves innovation at multiple levels within the firm. Innovation for a CE can include both technological innovation (product, service or process innovation) and non-technological innovation (i.e. organisational and marketing innovation) (Oliva et al., 2019), and an underlying change in practices (Hobson, 2016). In general, this business model discussion is not challenging the current economic growth models; instead, it focuses on incremental changes, e.g. less use of chemicals, reduction of water consumption or use of greener energy. In the case of PSS, new business models arguably include less production and fewer items sold, as the firms aim to provide a service (e.g. in the case of transport, through leasing or renting access), but they do not explicitly lead to less consumption through use (Tukker, 2015).

Changing business models towards CE is demanding for the firms and their employees, as they adjust to new ways of delivering value, by changing multiple practices, and it can further challenge the relationship between firms and their customers. The human side of changing business practices from linear to circular namely the role of managers and employees has scarcely been dealt with in the literature, including the interface between GHRM and CE (Roscoe et al., 2019; Chiappetta Jabbour et al., 2019). Notable

exceptions include showing that GHRM has a positive impact on both the green organisational culture and environmental performance of firms as well as Singh and Singh (2019) that show a link between organisational justice, psychological empowerment and job satisfaction. The influence of GHRM can be achieved through the strategic hiring of managers and employees who support CE values and practices, and further education and training of employees, as well as the application of measures and incentives that support the development of CE practices by employees (Roscoe et al., 2019; Chiappetta Jabbour et al., 2019).

Regarding the consumption side, the role of individual citizens, as well as citizen groups, has not received much attention in the literature, and we have little knowledge of how customers respond and what they value in such business models (Hobson, 2016; Bocken et al., 2014). Traditionally, the literature refers to citizens as consumers when discussing purchasing and consumption behaviour, while Ellen MacArthur Foundation (2013) suggests that in CE, the individual role will change from consumer to user. The implication is that with changing to CE business models, the role of individuals changes from ownership to use with PSS models (Ellen MacArthur Foundation, 2013). We find that both terms indicate a passive role, whereas individuals are key actors in the change towards CE, in relation to consumer responsibility (Ghisellini et al., 2016), changing consumption practices (Hobson, 2016), changes in norms and practices relating to ownership, and even how they influence policy through voting behaviour, to name a few. Based on this, we suggest referring to individuals as citizens, thereby implying the vital role in the change towards CE that is assumed by multiple authors (Hobson et al., 2018; Lieder and Rashid, 2016; Ghisellini et al., 2016). Given the limited knowledge about the willingness of citizens to change their consumption practices, CE research should deal with how values and norms influence the change process, or how different policy measures or business models influence their behaviour (Hobson, 2016).

3.5. Defining circular economy

Until now, we have deliberately refrained from referring to one or other of the frequently quoted definitions of CE, e.g. the most commonly used one provided by the Ellen MacArthur Foundation.² Nor did we intend to add yet another narrow definition to the 95 different definitions found by Kirchherr et al. (2017) in a systemic review of the CE literature published between 1950 and 2015. Instead, we rather emphasise that we apply a broad understanding of CE that

- looks beyond the formal organisations of the market economy, including civil society organisations, social businesses, public enterprises as well as the role of private individuals;
- is not limited to the technicalities of CE implementation, namely efficiency gains in material and energy flows, but also questions the kind of products, production organisation, and resulting consumption patterns and socio-ecological externalities. To use a blunt example: a car with a combustion engine produced entirely according to CE principles would still be a car emitting greenhouse gases and pollutants, using road infrastructure,

² "A circular economy is an industrial system that is restorative or regenerative by intention and design. It replaces the 'end-of-life' concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models." Ellen MacArthur Foundation (2013) Towards the Circular Economy: Economic and Business Rationale for an Accelerated Transition. The Ellen MacArthur Foundation, Ellen MacArthur Foundation (2013).

potentially causing accidents, and perpetuating an unsustainable way of organising mobility;

- deliberately includes and emphasises the social dimension of CE-related practices.

The outcome of this literature review shows a particular imbalance regarding the social dimension of CE. This reassures us that the conceptual framework presented in this paper is relevant. The framework will allow researchers to both a) scrutinise the role of social practices and institutions, and b) focus on a rather flat ontology using an exploratory methodology. Section 4 includes further discussion about the suggested methodology.

4. Methodological challenges

The aim of this section is twofold: first, we suggest a way of operationalising the practice theory and institutionalist perspective for CE-related research. Second, we discuss the resulting methodological challenges and present a selection of appropriate methods that can be used either independently or in a combined, mixed-methods approach.

By understanding practices as 'sayings and doings' – as suggested by Schatzki – and by including their material dimension, it seems appropriate to cover all three aspects in the further methodological operationalisation.

1. *Doings*: Scrutinising the everyday practices in relation to CE aspects requires an assessment of operational routines, ranging from standardised processes and procedures to patterns of individual strategies to cope with CE imperatives, e.g. assessing the extent to which the everyday work of individuals (e.g. employees, consumers, decision-makers and activists) is affected by them. From a spatial perspective, the doings may change functional relationships (e.g. between firms) and thus leading to changing geographic patterns (e.g. adapted supply chains).
2. *Sayings*: The way people speak about CE presumably has a 'dual performativity' (i.e. both meaning and power), understood as:
 - a) public, political and media discourses on CE do convey *meaning* by the way CE issues are framed and referred to (e.g. recycling technology-oriented discourse versus comprehensive and systemic interpretation of CE);
 - b) simultaneously, discourses encompass a *power* dimension, linked to the position of those promulgating a particular discourse (e.g. a leading firm in a sector setting ambitious CE goals others would tend to imitate, or the same leading firm downplaying the need for profound changes and only selectively adapting to CE policies).

Both dimensions influence individual mindsets, shared attitudes and corporate strategies. Furthermore, they may create a place or context-specific discursive spaces; in other words, prevailing discourses in a region may impact the perceived pertinence of CE endeavours (e.g. when a regional government successfully promulgates a deliberate CE strategy and is supported by key business associations and stakeholders).

3. *Materiality*: Both the doings and sayings can only be understood dissociated from their material environment, which includes physical infrastructure, tools, resources and material flow, paired with the environment's spatial dimension (e.g. the distance between cooperating firms, the role of proximity in industrial symbiosis schemes). The physical space here includes both the natural environment as well as any built infrastructure, processing of materials, and mobility of people and goods.

Despite their partly overlapping character (e.g. most of the doings having a material dimension, too), those three aspects require different modes of operationalisation, and with that, a corresponding mix of appropriate methods (see overview in Table 1). Probably the most comprehensive way of assessing the actual doings of individuals would be to trace their everyday routines, either by real-time monitoring through (participant) observation, by narrative reconstruction through interviews, or by diary methods in which research participants are asked to document their 'doings' themselves. In a second step, a comparison of the individual actions can identify recurring ways of doing things. These methods would allow the researcher(s) to scrutinise patterns that constitute collective practices – both established and emerging. Another – preferably complementary – way of operationalising 'doings' would be an assessment of the most tangible structural articulation of practices, i.e. the networks and patterns of exchange between actors, employing detailed actor mapping, which can be accompanied by (qualitative) social network analyses.

While somewhat ethnographic methods are required for the investigation of 'doings', a toolkit from the well-established array of qualitative discourse and content analysis can be used to analyse the role of respective 'sayings'. For example, the way individuals, groups of individuals or entire organisations (e.g. official publications of a firm) frame a topic such as CE may not only indicate their understanding of the field but can also provide insights into the (potential) performativity of discourses. A telling example of the latter would be the wording used by multipliers such as business associations when providing their member firms with background information and practical recommendations regarding CE implementation. Furthermore, comparing the 'sayings' of different actor groups may reveal the existence of discourse coalitions. The latter are configurations in which actor groups otherwise practising distinct discourses share a similar discourse pattern (e.g. a trade union and an environmental NGO (somewhat unintentionally) using similar framings and arguments in a political debate). Textual sources for this kind of analysis range from public as well as internal documents (e.g. reports, position papers, press releases and media articles), interview transcripts and website content with audio-visual sources (e.g. video statements, filmed interviews, social media items).

Finally, the material dimension of CE-related practices could take two angles. The first would be an assessment of the material and energy flows that are supposed to become the subject of CE loops. Here, the established monitoring techniques include material flow analysis, lifecycle analysis (LCA), and other established standards and supporting software tools. A second angle would be to focus on the materiality of enablers and barriers to the effective implementation of CE principles. Infrastructure, tools (e.g. management and monitoring systems), the design of corporate facilities as well as the spatial location and distances may affect practices, and simultaneously the outcome of practices. They thus generate a relevant institutional power, where interviews, observations, modelling, GIS or the analysis of technical reports are the relevant tools of assessment.

Even though most of the methods listed above are well established in qualitative social science research, their application in the study of social practices implies particular challenges in the following areas:

- *Practicalities*: Amongst the methods suggested here, some can become demanding in terms of time, funding and human resources. Observation and tracing techniques, in particular, not only demand a comparatively large amount of time to be invested; they also require considerable flexibility in response to short-term changes in terms of the availability and accessibility

Table 1
Practice dimensions and their methodological operationalisation.

Practice dimension	Spatial articulation	Operationalisation	Suitable methods
Doings	Functional	Trace everyday routines of actors Scrutinise networks and inter-organisational cooperation and learning	(Participant) observation Narrative interviews Diary methods Actor mapping Social network analysis
Sayings	Discursive	Search for prevailing discourse patterns and topical framings Identify discourse coalitions	i.e. Discourse analysis of interview transcripts, media articles, policy documents, reports, corporate or institutional websites, and social media
Materiality	Physical	Assess the material preconditions for CE implementation (environment, infrastructure, tools, facilities) and their availability Evaluate the physical outcome of CE practices (secondary resources, transport relations, energy needs)	Expert interviews, observation, technical reports, modelling, GIS Potential studies, material flow analysis, lifecycle analysis

of the research subjects. The researched individuals can also be overwhelmed by the time demanded and may perceive the methodology as too invasive to their everyday work routines. Another practical challenge is the search for appropriate sampling techniques. Unlike in well-defined interview series, for example, the exploratory search for practices and its particular openness makes theoretical sampling almost impossible. Instead, any purposeful sampling attempt will be facing both the constraint of minimum sample size and the practical limits of too broad a sample. That is, even more than with other techniques, the final sample size has to be a pragmatic trade-off between the desired scope and the available resources.

- *Ethical issues:* Techniques aiming at observing individuals' behaviour challenge ethical aspects of ethnographic research in a particular manner. Notably, covert techniques will require a discussion of their ethical legitimacy and its limits, while overt approaches will at least imply transparency and consent given by the research subjects. The use of diaries as resources needs careful handling of confidentiality and anonymity.
- *Ontological and epistemological challenges:* The claim for a flat ontology and an open and exploratory research design encompasses two main dilemmas. Firstly, there is a dilemma between empirical openness and the practical need to draw plausible limits. This dilemma goes beyond the sheer sample size and includes the selection of sectors or actor groups as well as a study's geographical scope. Secondly, despite the clear conceptual framework sketched above, open exploration of this topic might reveal findings speaking to other epistemological reference systems; for instance, they might relate to research not interested in sustainability issues but in technological advances, management aspects and social dimensions of work. In both cases, practice research, as argued by Jones and Murphy, faces the problem of "demarcation" (2011: 382), i.e. finding the appropriate limits of practices as an analytical object.

Overcoming any of these three challenges takes thorough reflection on the conception and realisation of any empirical research in this area.

5. Discussion and outlook

As our literature overview has shown, the burgeoning research around recent attempts to implement CE policies tends to neglect various social aspects of these processes. These presumably range from inert business routines, through contingent consumption patterns, to dissenting approaches searching for more alternative CE approaches (e.g. commons/community-based sharing). With our broader understanding of the CE concept, we try to apply a more comprehensive view than the vast majority of the rather

sector- and technology-oriented literature. The framework presented in this article is simultaneously conceptual and methodological: Conceptual, as it combines institutional and praxeological elements in a spatial perspective; methodological, as it systematically attempts to operationalise the various dimensions and spatial articulations of CE practices. In the following, we discuss the implications our approach may have on both theory-building as well as on current research practices in the CE realm.

5.1. Implications for theory

An institutional approach informed by practice theory seems particularly suitable for assessing emerging social phenomena around the implementation of CE. It also allows for a spatial contextualisation of both the drivers for and the consequences of changing practices and routines related to CE. As an inductive perspective looking at a flat ontology, it further offers the thematic openness and methodological flexibility required to explore this dynamic field.

We use the example of (Haas et al., 2015), who provide a comprehensive study on the global state of CE outcomes, to illustrate the value-added our approach provides compared with research with focus merely on material flows and the technicalities of CE implementation. Starting with a definition of CE, which is limited to the material dimension (resource flows), the analysis applies cumulated quantitative data measuring material flows within and between countries. Undoubtedly, this global approach delivers reliable data and relevant information about the weight of CE in global material flows and waste management and allows for clear policy recommendations, e.g. calling for a reduction in societal stock growth and strengthening of renewable energies. At the same time, the explanatory power of the findings is limited in at least three regards: scale and granularity, topical scope, and access to information.

Scale and granularity: Analysing aggregated data from the national level does not allow either for detailed analyses of regional particularities or industry-specific differentiation.

Topical scope: Apart from using material flow-related data alone, the topical scope is also narrow in the sense that it exclusively looks at material flows between firms and other organisations, while neglecting the consumer side.

Access to information: As further outlined in the methodological section of this article, the research perspective determines the appropriate methodology, as the chosen methodology pre-determines what the subsequent analysis allow us to draw from the findings. That is, a conceptual opening, as presented in our framework, always comes with particular requirements for adaptation in methodological terms.

5.2. Implications for research practices in the realm of CE

Empirical research endeavours applying a practice theory lens have considerable potential to unravel the current dynamics in the realm of CE policies. At the same time, however, the problem of 'demarcation' of the studied phenomena (spatial and thematic scope versus flat and open ontology) remains, and bears with it the risk of requiring time-consuming and resource-intensive methods (e.g. tracing of individual actors). These particular challenges apply not only in terms of practicalities (e.g. access to the field) but also concerning ethical aspects (e.g. when tracing individual actors).

Undoubtedly, the lively debate about practice theory in urban and regional research (Everts and Schäfer, forthcoming) further differentiates the understanding and elucidates the usability of the concept. Nevertheless, much more empirical research in the specific realm of CE policies is needed if we are to gain substantial insights into and experience of how to cope with these challenges. Apart from bringing social practices into CE-related research, these projects should be ambitious in striving for new methodological practices or, in institutional terms, for changing research routines.

Finally, we hope that our plea for ontological openness and social practice-centred methodologies will enable future CE research to gain more differentiated and context-sensitive insights into the mechanisms of, drivers of and impediments to CE implementation.

Funding

This work is funded by the Fonds National de la Recherche Luxembourg (FNR), CORE C16/SR/11338441/CIRCULAR.

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