Letter

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How Circular Can We Legally Be? A Research Agenda for Adaptiveness to Close the Gap Between 'Traditional' Legal Concepts and Circular Innovation.

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Abstract

In this Letter, we aim to address a knowledge gap in the intersection, and boundaries, between law(s) and circular policies, business models, and practices. By exploring the existing literature and real-life examples across the world, this work provokes further research towards a deeper understanding of the necessary changes in the legal paradigm to enable circular innovation and achieve more circular and sustainable futures. Further research to address these gaps, particularly focussed on adaptiveness and resilience, can enrich our understanding of the challenges and opportunities in this evolving field.

Keywords: circular economy, circular innovation, environmental law, legal challenges, policy learning.

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1 Introduction

In the past decade, 'circular economy' (CE) has established itself as part of the solution to socio-ecological challenges (Ghisellini et al., 2016; Murray et al., 2017), which has been embraced by different stakeholders across the world (Monciardini et al., 2022). However, the CE is not just one 'thing' and it is recurrently criticised as an 'essentially contested concept' (see, e.g., Corvellec et al., 2020; Ghisellini et al., 2016; Kirchherr et al., 2017; Korhonen et al., 2018; Valenzuela & Böhm, 2017) that allows for "a whole range of interpretations and approaches to be bundled together" (Corvellec et al., 2020, p. 97). Within this critical understanding, dimensions of governance are some of the major challenges (Friant et al., 2020), with debates around CE being

"virtually silent on the social dimension" (Murray et al., 2017, p. 376). Transition to a circular *society* would only be achieved with a holistic approach to governance that integrates the social and political to the ecological and economic considerations of circularity (Friant et al., 2020).

Still, policies inspired by CE principles have been rapidly adopted at different levels of governance (Fitch-Roy et al., 2020; Monciardini et al., 2022; Monciardini et al., 2023), introducing new concepts into legal and policy language. In fact, Murray et al. (2017) argue that such principles emerge from legislation across the world rather than within an academic field in itself (see also Kovacic et al., 2019). However, many of these new 'circular' concepts are still not well defined, neither in policies nor in literature. Circular innovation through policies, business models, and practices need to challenge – yet still be overall coherent with – 'traditional' legal concepts, or they "may inadvertently be at risk of being defined as 'illegal' " (Hopkinson et al., 2024, p. 1). The fragmented state of the circular regulatory landscape decreases the legal certainty for circular-oriented practitioners. In addition, "we tend to be late and reactive in our adjustments of regulation" (van Eijk, 2015, p. 3). However, the literature on CE and law(s) is under-theorised.

In a recent contribution to this journal, Cherrington et al. (2023) argue that effective public governance is imperative to facilitate and accelerate circular transition – disparity in regulations and policy frameworks being a notable challenge (see also Manolchev & Cherrington, 2024). Extending their argument towards a place-based approach, Böhm and Alexander (2024) highlight the importance of local policymakers and well-crafted local policies to create a supportive environment and enable circular futures. Similarly, in their most recent editorial, Mention et al. (2023) argue for the need of a wider, multi-stakeholder, and multi-level perspective to address the climate crisis, that is, "change, and de facto, innovation needs to be concomitantly driven by adequate policies, regulations, and institutional frameworks, as well as by bottom-up approaches" (p. ii). Joining the conversation, in this Letter we question how circular we can legally be. By exploring the literature and real-life examples of contradictions between 'traditional' legal concepts and 'circular' policies, business models, and practices across the world, this work provokes further research towards a deeper understanding of the necessary systemic changes in the legal paradigm to enable more circular and sustainable futures, borrowing elements of the framework towards adaptiveness and resilience from the literature on adaptive law.

2 What is the role of law in the circular economy?

The literature on the intersection and boundaries between CE and law(s) is currently under-theorised, and fragmented. Two main and interconnected questions should be discussed here: (i) whether CE is a field of law in itself; and (ii) what role other fields of law play in the CE.

CE as a legal field is contested in the literature. Monciardini et al. (2023), for example, argue for the emergence of a more coherent 'Law of the CE' to address the limitations of the linear paradigm of Environmental Law and, particularly, its 'salami effect'. Although the literature recognises 'life-cycle thinking' as a policy principle to enhance circular innovation (see, e.g., Dalhammar, 2015; de Römph & Cramer, 2020), this paradigm is not followed by environmental legislation, or other law(s). On the contrary, mainstream legislation follows a linear flow, which "can be likened to the cutting of a salami sausage into segments where the segments have been developed in order to deal with the immediate and usually local effects of manufacturing" (Monciardini et al., 2023, p. 222; see also Hughes, 2017). In this sense, a 'Law of the CE' that embraces the new circular paradigm would then need to adopt a holistic, product-oriented approach. This would lead to a disruption of the market in support of circular innovation and, ultimately, achieve broader environmental and social sustainability (Monciardini et al., 2023; see also Milios, 2021).

On the other hand, Lesniewska and Steenmans (2023) rather purposefully address this debate as 'CE and the laws', considering that "CE is neither a discrete and self-contained regime, nor does it sit within the border context of one particular area of law" (p. 11), despite being more closely linked to environmental legislation across the world. Similarly, Ballardini et al. (2021) understand that circular principles should be reflected in all fields of law. In this sense, some authors attempt to examine "how the current legal framework can be improved and how coherence within and between the relevant laws can be established in view of life-cycle thinking" (Norouzi, 2022, p. 963).

Similarly contested is the question of the role that other fields of law play in the CE.

Ranta et al. (2018) argue that the "institutional environment both supports and inhibits the adoption of and transition to a CE" (p. 72). On the one hand, the lack of effective legislation is often framed as a barrier towards circular transition (Bressanelli et al., 2019; Diaz Lopez et al., 2019; Geissdoefer et al., 2022; de Jesus & Mendonça, 2018; Kirchherr et al., 2018; Russell et al., 2020). More specifically, some authors mention, e.g., the lack of internalisation of externalities and resource pricing through policy, and of policy coherence (van Eijk, 2015), the lack of coherence also between region-specific laws (Tura et al., 2019), insufficient implementation of circular policies (Govindan & Hasanagic, 2018), and uncertainties about future legislation (Shahbazi et al., 2016). Furthermore, the current legal framework is rather adjusted to the needs of linear business models (Monciardini et al., 2023), and does not support circular innovation (Govindan & Hasanagic, 2018; Maitre-Ekern, 2021).

On the other hand, de Jesus & Mendonça (2018) also point out to a potential 'entrepreneurial role' of circular policies, with an overwhelming mention to institutional and regulatory drivers in the literature, particularly in terms of legal compliance (see also, e.g., Geissdoefer et al., 2022). But this potential is not considered in the established legislation. Discussing the role of 'law(s)' in fostering circular transition, Ballardini et al. (2021) reflect that "there is a need for the legislator to shift towards practices that reflect a social-planning type of vision" (p. 4) - that is, challenge the mainstream understanding of 'traditional' legal concepts. Ranta et al. (2018) identify the relevance of regulatory drivers across different geographies, even if those are currently not sufficient to ensure circular transition. Similarly, it is often argued that legislation *could be improved* to create an enabling environment and thus be a driver towards circular transition, for example, with the imposition of regulatory standards and requirements (e.g., extended producer responsibility or product stewardship) or through subsidies and tax measures to change businesses and consumers' behaviour and performance indicators (see, e.g., Govindan & Hasanagic, 2018; van Eijk, 2015). Other market-related barriers can also be addressed by governmental intervention through circular policies (Kirchherr et a., 2018). Similar arguments have also been made for the re-conceptualisation and re-politicisation of other fields of law, such as consumer law (Mak & Terryn, 2020; Micklitz, 2019).

2.1 Illustrative example of legal barriers to circular innovation

In practice, it is relevant to (re-)think about the role that other fields of law play in the CE because there are several instances where enforcement of 'traditional' legal concepts run counter to 'circular' innovation through policies, business models, and practices. To illustrate our call for further research, in this section we draw upon four examples of barriers to CE principles stemming from the current 'linear' paradigm of legislation: (i) intellectual property rights and competition law vs. 'right to repair' policies; (ii) intellectual property rights vs. reuse and upcycle of textile products; (iii) property rights vs. product-as-a-service and digital platforms; and (iv) waste vs. substance and product regulation.

Intellectual property rights and competition law vs. 'right to repair' policies.

Product repair is widely recognised as one of the inner circles in the CE, as it is one of the best options to extend product lifetime and minimise waste (Svensson-Hoglund et al., 2021). In response to manufacturers' practices towards premature obsolescence and aftermarket monopolies (Perzanowski, 2022), the 'right to repair' (R2R) has evolved to a globalised movement advocating for more repairable products and questioning the dominant linear and 'throwaway' paradigm (see also, e.g., Graziano & Trogal, 2017).

In the legal realm, this debate opened many questions, such as who has the right to repair, what would a right to repair include, who is the owner of a product, and who can have access to repair manuals and spare parts. Parts of these questions are linked to wider legal debates, e.g., intellectual property rights (Svensson-Hoglund et al., 2021; see also Ballardini et al., 2021). In Norway, for example, Apple sued a small independent repairer (Huseby) who imported refurbished iPhone screens from China for breach of Trademark Law. In a decision of the Court of Appeal, later confirmed by the Supreme Court (IIC, 2021), the imported screens were considered to be illegal copies. The covering of the affixed trademark with a permanent marker was not deemed sufficient to eliminate the risk of harm to the trademark (Rognstad, 2021).

In practice, there are two separate markets of repair: on the one hand, the authorised repair services through the OEM services or licensed third-party repairers and, on the other hand, independent and DIY repairers, including consumers (see, e.g., Bradley & Persson, 2022). The second group is placed in a disadvantaged position, because access to repair information and spare parts is often restricted and has a high cost in comparison to sales price. In the European context, for example, although EU competition rules could, in theory, address the limitation of access to non-authorised repair services, the CJEU has so far shown little willingness to challenge the dominance of OEMs on the repair market (van der Velden et al., 2023). In a case on the withholding of spare parts from independent repairers by market dominant Swiss watch manufacturers, for example, the General Court ruled that there was no breach of the law, because there was competition between authorised repairers (CJEU, 2018).

The newly adopted Directive on Common Rules Promoting the Repair of Goods in the EU does not ensure access to all repair information and spare parts to independent repairers and end-users, but requires that parts and tools (that are available per other legal requirements) need to be sold to independent repairers "at a reasonable price that does not deter repair". Moreover, the directive requires that, for products for which it establishes an obligation to repair, the service shall be carried out "either free of charge or for a reasonable price". The meaning of the term 'reasonable' is not specified, however, and is likely to vary from one national jurisdiction to another.

Thus, repair as a whole, and independent and DIY repair in particular, are still facing great barriers in terms of access, affordability, and behaviours. Removing those and ensuring the emergence of a mainstreamed repair culture will notably require amending those laws that continue to promote linear business models.

Intellectual property rights vs. reuse and upcycle of textile products.

Another example of intellectual property rights that pose obstacle(s) to circular business models and/or practices is trademarked fashion products.

On the one hand, there is a growing concern about the environmental impact of textile over-production and waste, including the destruction of unsold fashion items (EMF, 2017), whereas donations, reuse, and upcycle of textiles are seen as sustainable and creative solutions (Elia, 2020; Pihlajarinne, 2021; Senftleben, 2023). On the other hand, 'trademark' can be defined as any registered sign, or combination of signs (such as, words, letters, numerals, figurative elements,

combinations of colours), capable of distinguishing the goods or services of one undertaking from those of other undertakings. If registered, the owner of the trademark has the exclusive right to prevent all third parties from using identical or similar signs for the purpose of trade, where such use would result in a 'likelihood of confusion'.

However, much of the limitations have more recently been eroded in national and regional systems (see Schenerman, (2021) for an overview of the United States; Pihlajarinne, (2021) and Senftleben, (2024) for the EU). In a case-study report published in 2022, Manolchev et al. (2022) have also found that labelling and trademark regulation in the United Kingdom impose uncertainties for sustainability- oriented businesses, particularly when slight changes are needed for the resale of textile materials sourced. In 2021, for example, Louis Vuitton sued and reached a financial compensation settlement with Sandra Ling Designs, Inc., a small business based in the United States, for trademark infringement due to the creation of accessories made from pre-owned luxury goods (Calboli, 2023). Such approach ignores the potential socio-ecological values of innovative circular practices (Senftleben, 2024), deemed the same as traditional infringement of exclusive rights and brand reputation (Schenerman, 2021).

Hence, despite the defences that might arguably be used, such as fair use and the doctrine of exhaustion, textile reusers and upcyclers struggle with the lack of legal certainty (Senftleben, 2024), particularly when third-party trademarked signs remain visible on reworked fashion items.

Property rights vs product-as-a-service and digital platforms.

The 'product as a service' construct, defined as the provision of the service inherent to a product without transfer of ownership (Hidalgo-Carvajal et al., 2021), has been largely associated in the literature as a practical means of realising circular principles (see also Bocken et al., 2017; Henriques et al., 2023; Kjaer et al., 2019; van der Laan & Aurisicchio, 2019). While "there is an opportunity to propose new policies to be in an advantageous position" (Hidalgo-Carvajal et al., 2021, p. 10), scholars understand that mainstream regulations pose a challenge for the implementation of this business model.

Similarly, Ballardini et al. (2021) use the example of leasing, or what they call 'limited property rights', to highlight the shortcomings of the mainstream approach to the concept of property in fostering innovative circular practices. Regulation on leasing contracts seems to be inadequate in many jurisdictions, particularly when compared with the current property law, which makes ownership appear as a 'better' right (Ballardini et al., 2021). Gröber and Winter (2018) examine in detail the design of today's common leasing contracts and show that only certain types can actually lead to circularity. New circular-oriented legal rules, including about property, would then need to be developed in this context.

Beyond product leasing, also the use of digital 'intermediary' platforms that offer short- and medium-term property rentals has recently been rising, evidenced by, e.g., AirBnB, Homestay, and privately managed rooms at booking.com, which points to an intersection between the concepts of 'circular' and 'sharing' economies (Henry et al., 2021). Mainstream legal rules neither incentivise nor prohibit these platforms, although there have been recent efforts to legally address their complexities, e.g., the EU's so-called "AirBnB Law" passed in 2024 (European Parliament, 2024). However, lack of uniform legislation (or, in some jurisdictions, any legislation) still leaves the users, as vulnerable parties, without legal protection.

Interestingly, recent studies have shown that digital platforms, such as AirBnB, mobilise their users as means of corporate grassroots lobbying to also re-shape laws in their favour (Aguilera et al., 2021; Yates, 2023). Without attention to the well-being of workers, users, and broader concerns about the environment, these movements risk a co-optation of circular and sharing

economies by 'hacking' legal rules (Yates, 2023) and, consequently, pose a barrier to circular innovation.

Waste vs. substance and product regulation.

The last illustrative example is the legal definition of 'waste'.

CE relies conceptually on analogies between economic and ecological processes, including the idea that the flow of natural resources in the economy should mimic nature's biogeochemical cycles (Cipriano, 2024, p. 4). Because such cycles are closed-loop systems, it is said that 'nature knows no waste'. Waste is instead a legal creation (Krämer and Badger, 2024), as legislation grants a 'waste' status to things to ensure that we act carefully in, and bear the costs of, getting rid of them.

The legal definition of waste is based on two elements (Aragão, 2006). The first one depends on the operations the material undergoes when discarded (Grosz, 2011). A narrower definition, in which only materials disposed of (i.e., either incinerated or landfilled) are considered waste, stimulates their recovery and hence circulation in the market, in tune with circular principles. A broader definition, by contrast, labels materials as waste also if they undergo recovery operations, thereby ensuring control of any materials discarded.

However, if the environmental impacts of waste management operations are, in general, addressed by Environmental Law, e.g., by pollution standards enforced via permitting requirements, why should Waste Law provide 'additional' control (Reese, 2000)? To answer this, we must consider the second element of the legal definition of waste: the circumstances under which the discard occurs (Cipriano, 2023). That is, whether from the perspective of the waste holder the discard of materials for waste management operations is consummate, intentional or mandatory. In practice, problems arise in the conjugation of the narrower definition of waste, according to which things discarded for recovery should not be labelled as waste, with the intentional circumstance, for the waste holder might declare their intention to recover the materials, but dispose of them instead, especially in jurisdictions where the legal system renders disposal more economically attractive than recovery.

Legal certainty as to the fate of the discarded materials is therefore key to solving this question and favour circular innovation (den Hollander et al., 2017). The control exerted by (a circular) waste management regulation *in addition to* (facility and media-related) Environmental Law may cease whenever there is unequivocal evidence of the future (re-)use of the discarded thing (Cipriano, 2023). Illustrative of this are Articles 5 and 6 of the Waste Framework Directive (Directive 2008/98/EC) in the European Union, and item B of the 'technical guidelines on transboundary movements of electrical and electronic waste and used electrical and electronic equipment, in particular regarding the distinction between waste and non-waste under the Basel Convention'.

To mimic nature and eliminate the concept of waste altogether, as proposed by the CE, substances and products need to be better regulated. In other words, substance (i.e., chemicals) and product-related (Maitre-Ekern et al., 2018; Monciardini et al., 2023) regulation should be higher on the legal agenda (Cipriano, 2023). In addition, these regulations only make sense if they are substance, product and/or sector-specific and based on lifecycle assessments (Bortoleto, 2015), which requires considerable technical and economic information and stakeholder participation, thereby increasing the complexity of regulation, but also its coherence.

3 Avenues for future research and conclusions

To address the contradictions between 'traditional' legal concepts and circular innovation through policies, business models, and practices, we call for future research that provides a systematic, interdisciplinary, lifecycle-oriented and comprehensive analysis of legal issues around CE. In this Letter, we have examined the literature and concrete examples of 'traditional' legal concepts posing barriers to circular innovation. Further analysis should carry on with this careful examination and provide guidance to the reinterpretation of said concepts, as well as recommendation to policymakers. Beyond that, we call for a move towards circularity as means to achieve environmental and social sustainability, bridging technical narratives on CE with its social dimension and focussing particularly on social justice. Within this understanding, circularity is not an end in itself (Monciardini et al., 2023).

As illustrated in this Letter, the legal framework towards circular innovation is currently fragmented and, at times, incoherent with other fields of law. In addition, as van Eijk (2015) previously argued, "we tend to be late and reactive in our adjustments of regulation, which is frustrating new initiatives" (p. 3). Hence, more and more, adaptiveness is the key, and circular innovation requires adaptation to evolving and uncertain contexts (Cherrington et al., 2023).

Beyond bottom-up adaptive governance frameworks, focussed also on environmental management (see, e.g., Cosens et al, 2020; Soininen et al, 2023), within the legal realm, the concept of 'adaptive' law has been suggested by Arnold and Gunderson (2013) as a set of conceptual tools and institutional characteristics which facilitate adapting complex social-ecological-institutional systems to disturbances, such as climate change or the negative effects of linear economy. Legal systems can be understood as maladaptive or adaptive. Adaptive legal frameworks introduce a new resilience-based paradigm, in order to replace legal system features that are rigid, ignore interrelationships among social and ecological systems, emphasise front-end prescriptive rules, and generally are ill-equipped to adapt to rapid, unexpected change – such as the 'salami effect' provided by the linear paradigm of Environmental Law, as mentioned above. Resilience-based paradigm, on the other hand, facilitate the adaptive capacities and reduce vulnerabilities (see, e.g., Arnold & Melo Cartaxo, 2022 about impacts of climate change in the context of resilient cities; and Borgström, 2018 about forest regulation in the light of bioeconomy), by emphasising that we need to ask: resilience of what, to what, and for whom (Cosens et al, 2020). They are characterised by: (i) multiplicity of articulated goals; (ii) polycentric, multimodal, and integrationist structure; (iii) adaptive methods based on standards, flexibility, discretion, and regard for context; and (iv) iterative legal-pluralist processes with feedback loops, policy learning, and accountability (Arnold & Gunderson, 2013; Arnold & Melo Cartaxo, 2022). Although not explored in the literature as such, frameworks like these might also be key to support a transition from linear economy to circularity.

Relevant in this discussion is that legal frameworks are not a technical matter, in which social dimensions must adapt to technical solution proposed towards circular innovation (see, e.g., Monciardini et al., 2023). On the contrary, adaptive legal frameworks do not only assume adaptiveness but also intend to be adaptive themselves so as to be able to easily accompany change (Cosens et al, 2020; Soininen et al, 2023) – from linearity to circularity in this specific case, especially considering that the illustrative examples of 'traditional' legal concepts running counter to 'circular' innovation mentioned in this Letter are not isolated. Whether we understand that CE is a field of law in itself or not, it is urgent that further research explore the systemic changes in law(s) and circular policies, to include adaptiveness and resilience. It could also avoid co-optation of 'social justice' projects within circular innovation by more powerful (linear) interests, and enable

local policymakers to create a supportive policy environment for circular futures, as suggested by Böhm and Alexander (2024). Still, adaptive legal frameworks must coexist with more conventional legal frameworks (Arnold & Melo Cartaxo, 2022), being just one part of the solution.

Among the questions that remain unanswered, future research could focus on how we design policies that foster circular innovation while dealing with these 'legal' gaps, which kind of policies should be implemented at which level of governance, and how these different levels of governance interplay. A nuanced analysis of how adaptive legal frameworks could be implemented in Global South and Global North countries would also benefit the overall goal of achieving social justice.

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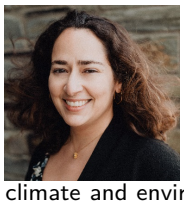
Biographies



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