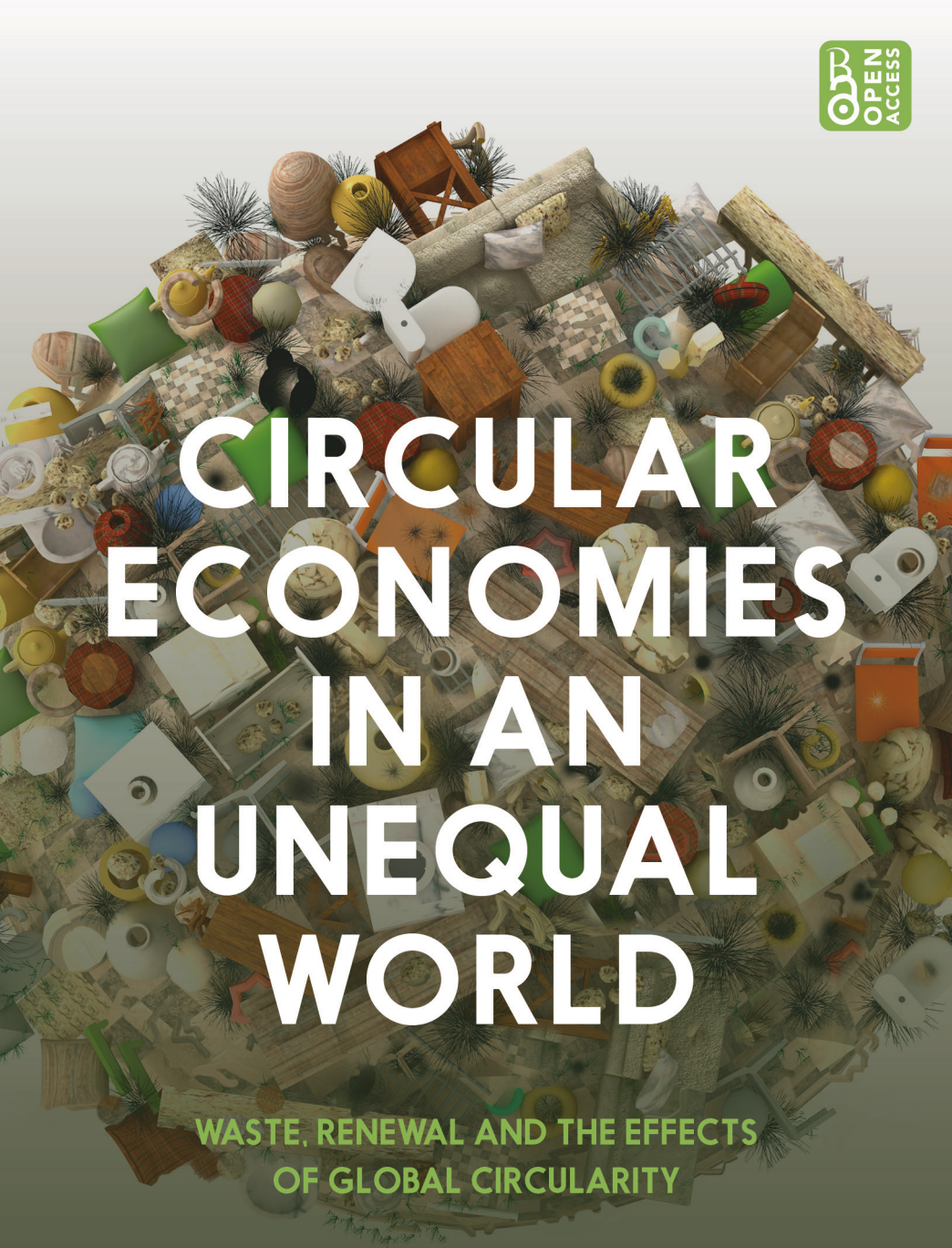

CIRCULAR ECONOMIES IN AN UNEQUAL WORLD

WASTE, RENEWAL AND THE EFFECTS OF GLOBAL CIRCULARITY

Edited by Patrick O'Hare
and Dagna Rams

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Introduction – Circular economies

Between the promise of renewal and unequal global circulation

Patrick O'Hare and Dagna Rams

It is no news to the reader that waste is a worrisome perversity of our times. It is distinct from previous waste-related crises such as sanitary problems that beguiled the early rise of cities. The distinctiveness stems partly from new types of materials such as plastics that outlast their original use and linger in the environment[1] and partly from the economic arrangements such as global economies of scale that give rise to waste at an express speed and enormous volume.[2] A plethora of frameworks has been created in the attempt to address such a contemporaneous manifestation of waste – among them, the circular economy has been one of the most recognizable.

A key challenge of this volume has been defining the 'circular economy' amid the term's historical elaborations and travels far and wide. Its definitions often invoke what it is not, namely it is not the 'linear economy' in which natural resources become consumer goods and then eventually get discarded as waste. Broadly, circular schemes are concerned with the prevention of waste rather than waste's management or utilization, which are otherwise the objectives of waste infrastructure and recycling. When it comes to the details of what circular economy stands for, we see more debate with respect to the proposed scale, scope and focus of circular changes.

1. There are numerous studies in social science that have tracked this new type of waste and its profusion. Rachel Carson's (2002 [1962]) *Silent Spring* was one such initial investigation. More recent efforts cover different types of waste and their global scales, notably Lepawsky (2018).

2. Various social scientists have probed this relationship between global capitalist economic system and its tendency to produce waste, notably Liboiron (2021), MacBride (2013) and O'Neill (2019).

The term 'circular economy' was coined in architectural, engineering and economic circles in North America and Western Europe in the 1970s and has gone mainstream more recently. The range of disciplinary backgrounds – from hard to social sciences – involved in the economy's elaboration signals that it has been treated as both a technical and social challenge. The technical challenge involves developing new materials to increase durability and facilitate recycling. The social challenge meanwhile is to reshape economic systems so as to move them away from patterns of production and consumption that promote waste (e.g. fast fashion). This means that a range of schemes including those that facilitate connections between discarding and production, those that seek to change materials used for production to extend product life, and those that alter how people consume goods so that they discard less can all be referred to as 'circular'.

Additionally, the uneven regional scale and distribution of design, production, consumption and waste can determine the nature of circular schemes. Many of the transnational companies that have been seen as polluting at a global scale tend to take decisions in their headquarters in North America or Europe while the consequences of these decisions might be experienced elsewhere in the contexts of resource exploitation and production. Likewise, some waste infrastructures around the world are better prepared to tap into waste and transform it into a resource than others. To take the example of fashion, the possibility of making it circular might be quite different in countries like the UK, where many fast fashion brands find their biggest consumer markets (c.f. Thomas 2019), compared to the West African country of Togo, where second-hand clothes from the Global North exist side by side a vibrant economy of tailors and textiles that might be more responsive to circular schemes but finds itself under pressure from global markets in used and cheap clothes (c.f. Sylvanus 2016).

Yet 'circular economy' as a blanket term has seen a recent mainstreaming across geographies, with the EU adopting an ambitious 'circular economy action plan' and China enshrining the circular economy (*xunhuan jingji*) in law since 2008. These schemes often involve large sums of money. In the EU for instance, funds from the European Structural and Investment Fund, Horizon 2020 and the LIFE programme have all been made available for enabling a transition to the circular economy at nation state levels, in addition to finance and advice provided through the European Investment Bank. The private sector has been similarly responsive to the circular economy. There are

new streams of funding and investment, with BlackRock's CE fund now worth over US$2 billion.

What is the circular economy? Who gets to define it and propose solutions to advance it? Does it matter when all sorts of actors – from multinational companies to smaller community initiatives – refer to the term to explain their various activities? What in the circular economy is symbolic and promissory and what is truly reformatory? How should we deal with the diversity of waste-reducing practices and ideologies that do not use the term yet could enter a productive dialogue with it? How to deal with emerging hegemonies backed up by powerful institutions that might be narrowing such diversity of ideologies and practices? How are possibilities of a circular economy regionally circumscribed based on the uneven spatialization of design, production, consumption and waste generation?

Anthropological theorizing and practice allow for a situated exploration of these questions through the observation of circular economy interventions but also of economic traditions that could converse with recognizable circular economic schemes, thus critiquing, ameliorating or contextualizing them. On the one hand, such an engagement addresses the currently limited anthropological theorizing about the circular economy per se. Anthropologists have been interested in policies and cultures of reuse and recycling (see Alexander and Reno 2012; O'Hare 2019), but as mentioned such schemes differ from the circular economy in that they address waste as the effect of production or consumption rather than seek to remake economic systems and industrial design so as to prevent waste.

On the other hand, the anthropological archive can inform a broader inquiry into practices and ideologies of circulation beyond explicit circular economic schemes. An argument can certainly be made that the Kula Ring – the circulation of arm shells and shell strings between tribes of different Melanesian islands – as written about by Bronislaw Malinowski (1920) could be interpreted in relation to the principles of the circular economy. The Kula involved continual circulation of ceremonial items between inhabitants of spread-out islands and their transitory possession where multiple people would access certain symbolic goods for limited periods of time until having to pass them on to others. The Kula objects were imbued with spiritual and sentimental value linked to previous owners and bestowed social status upon trade participants. Paul Sillitoe cites the Kula Ring as an example of a sphere of exchange of durable wealth, where 'transactable objects belong to the society as a whole and are not inalienable possessions associated with

certain persons' (2006: 15). The Kula tacitly shows that maintenance of objects in circulation could require developing new relationships with them that go beyond fixation on their utility or lack thereof, with Malinowski mentioning that visible damages to ceremonial objects would be treated as 'marks of distinction' (Malinowski 2005 [1920]: 383). Other examples of such practices and ideologies include studies on building from sustainable materials (Cassiman 2006; Vellinga 2005) and labour regimes built around maintenance rather than production (Denis and Pontille 2014).

To expand on these potential avenues for anthropological theorizing and practice, this introduction first seeks to explain further how the term 'circular economy' has been used over the years and how we could distinguish it from other kindred terms to enable a productive dialogue about economic systems in relation to waste. The introduction also first outlines and then elaborates three tangible ways in which anthropologists might usefully contribute to studies of the circular economy.

The first potential contribution of anthropology is to treat circular thinking and practice as socially embedded. This is especially productive as recent manifestations of circular economy focus on material design and technical challenges, making assumptions about how far social contexts can be disciplined to follow the proposed solutions. Likewise, social embeddedness means that there is a potential gap between the circular economy as a proposition and as an actual policy implementation. We can point to nascent anthropological studies of explicit circular economy schemes, such as those rolled out by the European Union and other states (see Angelidou and Pateraki in this volume). They can help situate conceptual understandings of the circular economy at a grassroots level, aiding to distinguish between the circular economy in theory and in practice, especially when such practice is coloured by local realities that are distinct to universalizing ideologies.

The second possible contribution is to analyse existing circular economic interventions with the aim of understanding how they represent the economic arrangements that they seek to improve and how in turn the proposed improvements either struggle to upend the status quo or perpetuate it under new guises. As such, the contribution would be to analyse both the conditions of possibility of the circular economy that might be economically or geographically circumscribed and the specific new paradigms that circular economic interventions install. For example, as many contributions to this volume show, circular economic

schemes win popularity with corporations and governments because they promise aligning considerations about the environment with those about economic growth and provision of consumer goods. Yet in making such promises, they redefine sustainability to privilege economic interests. In consequence, the circular economy garners symbolic value and political influence that call for a critical acumen in response.

Finally, in relation to anthropology's value as a discipline that interrogates a variety of social institutions across geographies, anthropologists can draw attention to social practices that seek to prevent waste without invoking the circular economy – be it because that term is not known outside specific geographic and expertise contexts or not used for various reasons. It is fitting to mention that some of the foundational circular economic thinkers would frequently refer to cultural beliefs and practices outside Europe and North America, taking inspiration from their perceived concern for the environment. This means that although the circular economy was first conceptualized in Europe and North America and then travelled through publications and promotion to other places around the world, it has also been explicitly energized by a critique of Western capitalism and examples of economic practices that are seen to be outside it.

Relatedly, applied anthropology may shape circular economic schemes. Anthropologists have long been arguing that wastefulness and inefficiency are not straightforward categories (O'Hare 2019). Such thinking may help to find solutions that go beyond social dogmas but may also help to reframe and redefine problems (e.g. Appelgren and Bohlin 2020). Where so desired, applied anthropology can contribute to thinking about ways to promote the circular economy in order to overcome the social attachment to individual ownership and consumption, markets' attachment to business as usual and states' attachment to economic growth. Given that there has been limited applied anthropology conducted in relation to the circular economy to date, this introduction will primarily focus on the cultural imaginaries behind circular economy theory, and ethnographies of processes and projects that implicitly or explicitly engage the principles of the circular economy.

Defining the circular economy

The circular economy concept emerges out of the ecological economy tradition whose proponents believe that economics ought to be

normative; that is to say, it should involve value judgements and ideas of fairness. This was a radical proposition vis-à-vis the far more influential group of environmental economists who simply sought to represent environmental considerations as a monetary value that can be factored into cost-benefit analysis. The environmental economists argued that nature can be quantified, reduced to its utility for economic designs and environmental externalities permitted if balanced out by benefits (see Livingston 2019: 34). Ecological economists in turn argue that economists ought to promote nature as an explicit and non-negotiable value, with key texts being E. F. Schumacher's (1973) *Small Is Beautiful – A Study of Economics as if People Mattered* and Kenneth Boulding's (1966) *The Economies of the Coming Spaceship Earth*. These manifestos were imaginative exercises that searched for inspiration far and wide – referring to Buddhist traditions, imagining the world as a spaceship and using metaphors to open the economic discourse to the qualities of nature and not solely quantities of cost and benefit.

Boulding's text is often seen as the first building block of circular economy theory. While the term itself never appears in its pages, Boulding advocates a shift towards a 'closed system' that is likened to a spaceship in which 'all outputs from consumption would constantly be recycled to become inputs for production' (1966: 7). This is counterposed to what the author believes to be the existent hegemony of 'cowboy economics', which imagines a limitless plain 'associated with reckless, exploitative, romantic, and violent behaviour' (1966: 9). The language already suggests that the transition to the closed system is not only a technical issue but one of remaking men (humans) from cowboys into spacemen, something that includes instilling new virtues, attitudes, and practices. Although Boulding does not speak of circles, he does discuss spheres, linking the exhaustion of new earthly frontiers for escape or exploitation with the discovery of the spherical earth, which, although widely accepted since the navigations of the fifteenth century, would only become available in photographic form with the famous 'blue marble' photograph taken by NASA in 1972.

A similarly holistic view of the circular economy appears in the works of its key theoretician, Walter Stahel, who from the 1970s onwards has introduced new vocabularies, theories and case studies. He began with a review co-authored with Geneviève Reday-Mulvey (1981) for the European Commission entitled *Jobs for Tomorrow: The Potential for Substituting Manpower for Energy*, which proposes a 'closed loop economy'. As Stahel (2016) later explained, the report was inspired by his experience as an architect in the 1970s, as Europe was beset by

the oil crisis, which saw rising energy prices and high unemployment. The extension of life of buildings and products could be seen as a win–win situation, since it involves an increased use of labour in the context of unemployment and a decreased use of energy and materials in the context of high prices and scarcity. After the success of his report on closed-loop economies, in 1982 Stahel founded the Product Life Institute in Geneva, whose publications introduced and championed other concepts associated with the circular economy, including the performance economy (which suggests a need to shift from the sale of goods to that of goods' performance) and cradle-to-cradle (product design thinking that aims to prevent waste and create regenerative systems). Stahel's writings pitch the circular economy as a solution to resource management but also labour, which he argues should be reallocated from production to maintenance. Stahel's institutional acumen and conceptual proliferation have made him increasingly influential with governments and businesses.

The current consolidation of circular economic thinking and its diffusion is due in no small part to the work of the Ellen MacArthur Foundation (EMF), established in 2010. For the EMF, the circular economy is guided by three broad principles: designing out waste and pollution, keeping products and materials in use, and regenerating natural systems. The Foundation's principal activities involve lobbying, the commissioning of reports, and strategic partnerships with companies, cities and nation states with the aim of strengthening aspects of the transition. The Foundation's influence means that the EMF propositions about the circular economy have become synonymous with the circular economy itself. For example, the European Investment Bank's Circular Economy Guide (2020) and other international organizations reproduce the Foundation's definitions and visualizations in their own reports.

In its attempt to define the circular economy, the EMF institutes key binaries that are worth setting out for exploration. The first is that between a linear and a circular economy. Another is between biological and technical cycles: these are two cycles that function according to different principles and together constitute the circular economy in a butterfly model. Biological cycles are those that are designed to mimic natural systems and function according to the 'waste is food' principle (Kopnina and Blewitt 2015), whereby biodegradable materials can be harnessed to reinvigorate natural systems, through processes such as composting. Technical cycles, meanwhile, involve man-made synthetic materials that cannot be so easily reintegrated into nature: for these,

the modus operandi is the recovery and restoration of products, components and materials through strategies such as reuse, repair, remanufacture or (in the last resort) recycling (EMF 2013: 7). These binaries can be treated as something to translate into tangible business models (a task that the EMF often sets itself).

Unlike the early theorists such as Boulding, who offered manifesto-like suggestions, the EMF is intent on elaborating tangible, pragmatic solutions and securing capital to ensure implementation. Its primary focus has been on material design of commodities and development of new services. Some examples of circular economic cases heralded by the Foundation are food packaging from biodegradable seaweed as a replacement for plastic or corporate commitments to in-store collection of used consumer goods with the aim of recycling them into new products. As these goods and services are designed to make profit, they are aligned with key tenets of capitalism and economic growth.

Unsurprisingly thus, the Foundation partners with multinational corporations and states. Recent proof of this is a statement by the Foundation co-signed by some of the biggest multinationals such as Nestlé, Unilever, Pepsico and IKEA. According to the statement, the circular economy will 'create vital opportunities for economic growth that also restore the environment, create jobs, and benefit society'.[3] Given the list of powerful signatories, the promise of economic growth and the underpinning belief in business models as drivers for social change, such an expression of the circular economy has understandably been critiqued for appropriating the CE for the purpose of markets as usual.

A more radical interpretation of the circular economy meanwhile is rather englobed by kindred terms and propositions such as de-growth (Latouche 2010) and doughnut economics (Rawforth 2017). Serge Latouche's (2010) vision of de-growth argues for a sweeping re-direction of human energies away from profit-making towards the promotion of such intangible values as neighbourliness and conviviality, as well as new polities, currencies and social orders. Doughnut economics, meanwhile, is a concept that seeks to define planetary limits and social boundaries as entwined: the framework encourages a double-pronged reflection on the extent to which the economy meets the needs of people without impinging on the needs of the environment to survive.

3. Ellen MacArthur Foundation Joint Statement (2021).

The circular economy can thus variously be viewed as an open-ended exploration of economic systems with the aim of eliminating waste, as a guidebook for business solutions, or as a technical challenge for material and industrial design. The current hegemonic version of the circular economy, propped up by its most recent powerful proponents, is, however, design focused, and tangible, though it often struggles to scale up innovative pilots and institute systemic change.

Putting the social and political into the circular economy

Both early texts and current theorists posit the circular economy as an economic, social and political intervention that reshapes consumption, labour, markets and economic metrics. At a most basic level, one finds in them frequent references to 'culture' and 'society', but unlike the concept of sustainable development, which has long factored social change and at least the possibility of radical economic propositions into its agenda, it can be argued that framings of the circular economy have thus far remained oblivious to wider social concerns. Conceptualizations of sustainable development are often cognisant of global and regional inequality and equity issues and envision social change, with even the widely used Brundtland report definition ('development that meets the needs of the present without compromising the ability of future generations to meet their own needs') involving the idea of intergenerational equity. From that, it is not a huge leap to argue that satisfying the needs of a minority in the present should not be achieved at the expense of their global contemporaries. More pointedly, the Sustainable Development Goals (SDGs) approved by the UN General Assembly in 2015 involve a plethora of social aims, including the eradication of hunger and poverty and the importance of widespread access to quality education and healthcare.

None of the three central planks of the EMF definition of CE – designing out waste, keeping materials and objects in use and regenerating natural systems – say very much about the uneven global relations of power and capital. As Schroder et al. (2019) remark, 'for an inclusive transformation to a CE on the planetary scale, we cannot overlook . . . systemic issues of unequal power relations entrenched in global value chains' (12). The value chains as noted earlier follow specific geographic patterns in which design, production, consumption and waste have different scales and characteristics, and are backed by

uneven economic and political regimes. For example, while design and innovation are definitely not circumscribed to the Global North (e.g. Grace 2021; Mavhunga 2014), these geographies of design nonetheless have an outsized influence on the rest of the world that is difficult to counteract. As social scientists, we need to analyse both how these global economic contexts affect the possibility of a circular economy and how the latter in turn might perpetuate its underlying structures.

One of the specific ways in which the dominant definitions of the circular economy might disregard economic geographies is in their perception of recycling as an option of the last resort. Gregson et al. remark that both industrial symbiosis and extended product life versions of the circular economy are 'notable for a key absence: both write out global recovery and recycling, the primary means by which wastes are recovered and materials keep circulating through economies' (2015: 221). For the authors, this omission highlights that circular economies are also moral economies, that 'there are right and wrong ways of constituting the economic circulation of materials and, within the EU, the revalorization of wastes through global recycling networks increasingly counts as the wrong way to do this' (221).

The structure of socio-economic relations is crucial meanwhile for such parameters as the economy's inclusivity, distribution of profits, risks and hazards, and regulatory allocation of privileges, obligations and sanctions. In this sense, we can point to the work of Sebastián Carenzo, a contributor to this volume who, together with Jutta Gutberlet (2020), has argued for the need to place waste pickers 'at the heart of the circular economy' (see also Barford and Ahmad 2021), thus counteracting the tendency in Latin America to try to sideline waste picker collectives in favour of companies. In part, they do this by highlighting the potential overlaps and fruitful synergy between the circular economy, the ecological economy (EE) and the social and solidarity economy (SSE). The latter in particular involves the incorporation of historically excluded actors (e.g. waste pickers) into economic decision-making and value creation, as well as a move away from profit-driven growth towards collective and community ownership centred on the common good. As Gutberlet and Carenzo note, waste picker involvement in recycling processes can bring benefits with regard to the circular economy and particularly its principle of keeping materials in use, since in purely market-driven waste management systems it is often better business to charge for the transport of materials and their disposal in landfill rather than seek innovative recycling or repurposing solutions for materials that lack a viable market. The latter activities, Gutberlet

and Carenzo note, are much more likely, in the Global South, to be carried out by subaltern actors like waste pickers, in line with the proverb that necessity is the mother of invention. In some instances, such as the Uruguayan CE awards discussed by O'Hare in this volume, there have been belated moves towards recognizing subaltern actors' contribution to the circular economy, with a women's waste picker cooperative scooping an accolade in 2021.

The waste that the circular economy seeks to eliminate is itself a deeply social, relational and shifting category, with discard studies scholars emphasizing that perceptions of waste and wastefulness can be coloured by class, race and economic interests (Liboiron and Lepawsky 2022). Ascriptions of wastefulness, or conversely thrift (Alexander and Sosna 2022), are often associated with some actors more than others, regardless of the evidence for such claims, while some forms of wastefulness are highlighted over others. Offering appropriate solutions to wastefulness and inefficiency thus requires a profound cultural understanding of the processes by which certain practices and actors become categorized as both waste and wasteful (Alexander and O'Hare 2020) and as forming part of the circular economy or not. Isenhour and Reno (2019) strike a note of caution in this regard, raising two overlapping concerns. The first is that the discourse of closing loops may remain unimplemented, while obfuscating existing forms of excess. The second is that 'the embodied carework of tinkering, repairing and tending to materials, upon which the formal politics of economic circularity depend, is only alluded to, at best, in contemporary formations of circular economy' (2019: 1–2). This is a theme O'Hare (2021) has also taken up elsewhere, arguing for the existence of an 'actually existing circularity' of popular reuse and repurposing practices that might in fact be threatened by corporate circular economy schemes that seek to restrict the circles in which materials and commodities move. Of course, the idea of 'actually existing circularity' may also be embraced by corporate actors who have long been minimizing waste in their internal production processes.

The amenability of the circular economy to different economic interests means that without sufficient critical imagination, it can be used to greenwash social inequalities and constitute a new frontier for capitalist 'eco-accumulation' (Savini 2019). One of the functions of a nascent anthropology of the circular economy might then be that of pointing to the way that CE schemes can entrench, exacerbate or indeed create new patterns of inequality. This is a scenario indicated by Berry, Bonnet and Isenhour (2019) in their exploration of the existing and long-established cultures and economies of reuse in the United States.

Taking the circular economy to involve, at least in part, increased financialization and commodification of existing objects and their circulation as second-hand goods, the authors worry that the embrace of discarded things as a new commodity frontier might channel goods away from provincial towns towards US urban centres and overseas, limiting 'opportunities for locals who have long seen the value of discarded goods, and relied upon them to make a living' (2019: 8). Thus, from waste pickers to market traders, anthropological attention to social justice and inequality can highlight those that are recruited into and those that are left out of the economic circles of new circular economies and how.

The circle of life

The circular economy is often represented by actors such as the EMF as both a set of principles and a series of illustrative case studies of tangible changes to business models. This means that the line between the aspirational and the factual, the ideal and the real is often blurred. Nowhere is this more evident than in the model of the circle used by CE proponents. The circle is meant to represent the economy's aspiration to keep materials in circulation through regeneration, reuse and recycling. However, the extent to which a perfect circularity of all materials is achievable is debatable. Gregson et al. argue that within the circular economy bubble, 'the idea of a perfect circle comes to be taken for a reality', whereas it is at best 'an endlessly deferred, but attainable future' (2015: 224). Even a brief inspection of the EMF's database of circular economic projects from around the world shows that not all efforts are easily mappable onto a circle. For example, a virtual clothing line which allows customers to photoshop their portraits into unique virtual clothes seems like an interesting proposition to shift the desire for new fashion away from the material world but its circularity is not straightforwardly clear. The same goes for the featured companies that list their circular economic policies as a commitment to better sourcing of materials, which is neither novel nor straightforwardly 'circular'.

If complex real-world supply chains only rarely map onto circular diagrams, we perhaps need to look beyond the carved-out economic realm to understand why circularity is given such prominence and has so much purchase as an aspirational model for economic change. Effectively, an appeal to the circle and to regeneration relies on wider social valence of such symbols. Anthropology can point not only to

different cultural approaches to regeneration (and death) as in Bloch and Parry's influential (1982) edited volume but also to the strong tendency within Western thought to value the bios to the detriment of death. On the one hand, the death and decay of persons and things can clearly be generative of new life, whether these literally provide nutrients for the soil or pave the way for new generations and the transfer of social roles. Numerous cultural, political and religious orders, argue Bloch and Parry, have sought to 'overcome the spectre of a tyrannous biology' by converting death into rebirth (1982: 23). Yet at the same time, as Marilyn Strathern has recently noted, the social role and importance of death, rupture and discontinuity has perhaps been too quickly overlooked in anthropology and elsewhere, influenced by a Christian bias towards ideals of everlasting life. Re-evaluating ethnographic data from Papa New Guinea, she highlights the way that, for the Dobu, yams come to form part of a lineage, 'planted in gardens just as persons are buried in the village mound', livings tubers that will 'in giving rise to the shoot(s) that it generates, itself fall back into decay'. Her point is that people and plants are necessarily dying as well as living entities, and the eventuality of death is as important as the experience of life. Yet, she argues, 'the positive valorisation of life in anthropological knowledge is but a symptom of a pervasive inclination to see life in everything that is (positively) valued'.[4]

Like Strathern, literary scholar Robert Pogue Harrison (2003) points to the tendency within Western thought to flee from death, 'to emancipate ourselves, by any means necessary, from our millennial bondage to the land and our servitude to the dead' (32). In this context, Heather Davis argues that 'the use of plastic to stave off decay and decomposition – think of cling wrap and other mechanisms for preserving food – contributes in part to the imagined belief that we could, if not escape death, then at least postpone it' (2021: 49). Two of the chapters in this volume discuss the ways in which expanded polystyrene (EPS), used in food packaging, might be considered as forming part of a circular plastics economy. One of the defences of this problematic material is that during its short life span it helps to prevent food waste. Yet beyond the question of who actually profits from these technologies, one can also ask whether life extension outweighs collateral contamination, as EPS that has absorbed food cannot easily be recycled, and organic matter that has been contaminated with plastic cannot easily return to

4. Unpublished workshop paper, 'Life without its antithesis'.

the earth as compost. Plastic, the synthetic material par excellence, is located by circular economy scholars within a 'technical cycle' and food crops within a biological one. Yet it must be remembered that food crops are cultural as much as natural artefacts, and that plastic, through its combination with organic matter, helps both to preserve life and to prevent its regeneration. In Heather Davis's terms, plastics are 'impressed with an attempt to violently cleave the world in two, while also exposing how nature and culture can never be separated' (2021: 10).

The technical/biological divide is only one of the foundations of the circular economy that anthropology might challenge. David Graeber (2012), in a short but influential afterword, analyses circular and cyclical economic imaginaries and is highly critical of the idea that our economies, or indeed our lives, might be considered cycles at all. First, he suggests that the 'life cycle' of a product, the original cycle onto which 'recycling' is grafted, is presumably based on the human life cycle. Neither, he adds, are particularly cyclical, with the human life more closely resembling a 'long ascending arc with a final crash' (Graeber 2012: 279). The product cycle, he argues, is tied to market trade, because it is the idea of the cycle that enables us to imagine a 'steady state' object that circulates through time and space while itself largely remaining unchanged: a thing to which property rights can be ascribed. In fact, Graeber suggests, both things and people can be more accurately described as interlocking processes. Recycling then, for Graeber, simply represents the 'latest in a series of attempts to impose a circular, equilibrium model on a system that is, at least in energy terms, as far from an equilibrium as anything could possibly be' (Graeber 2012: 279).

We might take issue with Graeber's assertion that a Western industrial cosmology imagines the life of a commodity to be cyclical at all. Graeber himself notes the similarity between the death of humans and of things: each of these stages is to some extent hidden away, bodies in graveyards and rubbish shunted out of sight to peripheral landfills (see Reno 2016). The move to a cyclical imagining of the economy can thus be seen as characterizing not a hegemonic (linear) industrial cosmology but an emergent (circular) one, with new characteristics with regard to maintenance, repair and processing. Yet it is one that is ultimately inspired by models of natural equilibrium and biological cycles whose foundations Graeber critiques.

Debates about natural cycles and the role of humans within them are complex and polemical, particularly in the context of climate

change. As Doreen Massey (2006) has discussed, the idea of nature as being characterized by a state of original balance or harmony has been much questioned in the academy, in part because of the nostalgia that it promotes and its lack of recognition of the human role in creating such supposedly pristine landscapes as the Amazon rainforest (see Descola 2013). The circular economy also assumes that mimicking nature is always positive, while anthropological studies show that to think of nature as being cooperative and amenable to human designs fails to credit it with a wide spectrum of agency (see Williams 1973; Callon 1984). Yet, as Massey asks, if nature is presumed to always have been unstable, fluid and mobile, how can we establish meaningful ethical criteria for human intervention (2006: 39)? This is not a moot point, since those defending anything resembling a harmonious understanding of nature have long been pilloried by those seeking to defend anthropogenic planetary change, as when Rachel Carson was denigrated as a 'fanatical defender of the cult of the balance of nature' by the president of Monsanto for her work researching the impact of the insecticide DDT upon bird species (in Mann 2021: 11). Writing about plastic, Davis perhaps points us in the right direction for while she argues that 'there is no homeostasis or equilibrium from which plastic comes or might return . . . only variable ecological assemblages', she also argues that situating plastic in deep time and an unstable world should increase rather than diminish practices of awareness, care and responsibility (2021: 43).

Despite multifaceted critique from the social sciences, the circular economy at its best can be a radical concept that encourages a wholesale rethinking and redesign of our established economic systems (Corvellec et al. 2020: 98). This volume seeks to critically engage with the concept rather than simply dismiss it out of hand. Its contributions point to the power dynamics and differentials involved in deciding who and what are recognized as forming part of an emergent circular economy. They also explore the existing chains and flows in which materials – plastic, metals, textiles – are currently enmeshed. Far from coasting along linear routes, these often travel along complex pathways for which the ethnographic methods that many of our contributors employ are particularly suited. It is our firm conviction that the growing importance of the CE means that a grounded bottom–up analysis of both its multiple meanings and the contemporary production and consumption models that it seeks to reorder is imperative. This volume makes a modest contribution to this broader project.

Summary of the volume

While the concept of the circular economy is often mobilized in corporate and policy circles, many of the contributions to this volume are interested in how practices taken as constitutive of a circular economy form part of an 'actually existing circularity' (O'Hare 2021) or innovations from below that often go unrecognized and unnoticed. Like Hart's (2017) 'human economy' or Graeber's (2011) 'everyday communism', these contributions demonstrate the myriad ways in which the circular economy can be seen to exist in everyday life, in the cracks and crevices of our consumption-driven capitalist economy, in frugal or 'informal' traditions and in emergent forms of reparative re-use, waste prevention, or sharing. The volume also follows corporate and state circular economy plans, which, while appealing to virtue and sustainability, often revive economic growth dogmas and lay the ground for new forms of dispossession, or struggle to take hold as positive business models in a wider economy that is assessed by reference to production and consumption levels. The fear that circular designs reflect narrow corporate and state interests always looms in the background. Hegemonic framings of the circular economy usually incorporate appeals to transparency and accountability to prove commitment to sustainability but also make distinctions with informal practices. The circular economy can thus be seen as a key battleground for the future shape of our economy, an idea that fluctuates between a greenwashed version of the status quo and a more radical vision that builds on existing and emergent instances of green, democratic economic practices.

Circular models of production push producers to diminish their reliance on raw materials, leading to the emergence of new geographies of trade and brokerage. Closing the loop – that is, feeding waste or by-products back into production – is an effort that leads to the emergence of economic niches and new forms of regulation. In the first chapter of this volume, Dagna Rams shows how circular economic interventions heralded by development actors create new developmental politics and supply chains of metals between urban mining in Africa and industries in Europe. The chapter highlights some of the challenges and considerations of creating ethical supply chains of recycled (as opposed to raw) metals. Policies also give producers new responsibilities, with extended producer responsibility (EPR) principles requiring them to pick up some of the costs of managing the end of life of products. Julia Perczel's contribution focuses on a new breed of enterprise in India – a Producer's Responsibility Organisation

(PRO) – to which corporate and state actors outsource the end-of-life management of their goods. Perczel's chapter shines a light on some of the new bureaucracies and challenges that are created in the process of closing the loop. She focuses on the experience of one PRO as it tried to achieve sustainable outcomes amid a complicated economic ecosystem. Patrick O'Hare's chapter, meanwhile, looks at the system of prizes, funding and audits that aim to incentivize a transition towards a circular economy of plastic in Uruguay. In particular, he looks at two very distinct plastic materials/products – plastic board and expanded polystyrene trays – asking how both could have received circular economy recognition despite ostensibly constituting cases of down-cycling and virgin plastic production.

Another key tenet of circular economic models is reimagining the role of consumers. The consumption of objects prior to their wasting is central to a linear economic model. Circular models, in contrast, often involve the consumption not of objects but of services, while aiming to invest consumers with new responsibilities that seek to prevent wastage. Aliki Angelidou and Mimina Pateraki's chapter focuses on 'servitization' – a relationship between consumers and producers encouraged by EU-funded workshops in Greece. Consumers are trained to become new citizens who demonstrate their ecological commitment through developing novel and continuous relationships with producers, who maintain ownership over goods and service them, thus prolonging their useful life but in constrained ways. Yet workshop participants remained sceptical in the context of suspicion towards the EU and fears that long-held notionsof progress and modernity might be at risk.

Circular economy approaches also explicitly recast the role of discards in our economy – no longer a waste to be landfilled but a resource to keep in circulation through reuse, recycling and repurposing. Sebastián Carenzo and Lucas Becerra, and Laura Neville's chapters look at the role of waste pickers, who have historically carried out the lion's share of waste recovery and classification in the Global South, within the circular economy. Carenzo and Becerra follow Argentine waste pickers/informal recyclers to show how their everyday practices of social and technological innovation represent a 'circular economy from below'. They compare two innovative processes involving expanded polystyrene (EPS), one developed by a private company that employs former informal sector waste pickers and the other by a wastepicker cooperative itself. They show that although it is the former that has garnered circular economy accolades, the latter offers greater potential for a socially inclusive and disruptive

circular economy in the Global South. Laura Neville, meanwhile, shows that the utopian rhetoric of Columbia's circular economy policies has re-energized formalization efforts that create barriers to the integration of *recicladores* into official circular economy schemes. Despite the anti-landfill sentiment at the heart of circular economy discourse, landfills will likely continue to be used for waste disposal in many parts of the world for the foreseeable future. Indeed, as Daniel Sosna demonstrates in his chapter, these spaces have their own circular and cyclical practices and imaginaries, from the recirculation of discards by landfill workers to the natural water cycles that inspire vernacular solutions for the treatment of leachate. These practices in turn shine light on the difficulty of imagining circular practice without connecting it to the interrupting qualities of natural cycles.

Most chapters in this volume reference the friction between new circular economy policies and existing circular practices. Our final two substantive contributions, from Benjamin Steuer and Heike Derwanz, focus on policy in relation to how such practices are incorporated or disregarded. In her chapter, Derwanz traces a century-long history of German state intervention in the textile sector to show that ideas about thrift, circularity and reuse, far from a novel premise, have long transitioned between practice and legislation. Steuer examines China's experiments with circular economy as a 'Westernization' project that privileges Western solutions and technologies over embedded, popular and often informal practices. In consequence, the circular economy is seen in this instance as an economic intervention that privileges specific forms of globalization and worlding. Finally, in his afterword, Andrew Sanchez asks why it is that the idea of the circular economy appears so seductive, and how it is, and is not, rather like alchemy.

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