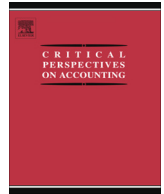


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## An ecological critique of accounting: The circular economy and COVID-19

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### ABSTRACT

Given the increasing participation of accounting technologies in purported solutions to deal with the ecological crisis, we address two areas where a growing accounting literature is emerging, the circular economy and the COVID-19 pandemic, testing some ideas to inform an ecological critique of accounting that could help us ward off the “dreams of escaping” (Latour, 2018). We suggest that the conceptual separation between nature and society renders accounting for the circular economy and the COVID-19 pandemic problematic. A critical account of the circular economy might problematize things like the whole economic system’s physical scale, spatial and temporal system boundaries, consumer culture, and the inherent politics of the circular economy. We also suggest that a critical account of the COVID-19 pandemic needs to take on board the participation of accounting representations in the construction of particular narratives about the virus. In particular, calculations of the costs caused by COVID-19 need to be connected to the ecological value of viruses to illustrate how the social and the biological worlds are inextricably connected. In both cases, we suggest critical accounting researchers need to be actively involved in discussions about how valuation constructs narratives about resource or waste, with significant implications on how we conceive the relationship between humanity and the environment.

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## 1. Introduction

The Earth is insufficient. According to the estimates of the Global Footprint Network, humanity and the global economic systems are consuming 60% above what the planet’s ecosystems can reproduce (<https://www.footprintnetwork.org/>). Humanity is transgressing several planetary boundaries (Rockström et al., 2009), and the ecological overshoot is producing, according to stratigraphers, not only ecological but also geological changes, giving rise to the Anthropocene (Davies, 2016).

At the same time, an increasing number of international initiatives pursuing sustainability are assigning key roles to accounting. Disclosure appears in a central position in European Union sustainability strategies (at the time of writing, the EU is reforming Directive 2014/95/EU on non-financial reporting), in the EU strategies on due diligence in supply chains (e.g., regulation 2017/821), as well as in the UK Modern Slavery Act or the French Corporate Duty of Vigilance Law (Folke et al., 2019). Likewise, multi-stakeholder initiatives, such as the United Nations Global Compact or the Seafood Business for Ocean Stewardship, attribute significant roles to accounting (Bebbington et al., 2020a). This evidence points

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towards a central functionality of accounting in attempts to address ecological challenges (Bebbington & Larrinaga, 2014; Bebbington et al., 2020a).

The growing number of initiatives that assign significant roles to accounting requires a critical inspection from an ecological perspective. There is a burgeoning literature exploring the accounting implications of the environmental crisis (Bebbington & Larrinaga, 2014; Bebbington et al., 2020a; Bebbington, Russell, & Thomson, 2017). However, compared with our knowledge of how corporations disclose sustainability reports to negotiate perceptions about societal environmental demands (e.g., Cho, Guidry, Hageman, & Patten, 2012; Cho, Laine, Roberts, & Rodrigue, 2015), we know very little about the interplay between accounting and substantial attempts to address ecological challenges.

This article explores some elements for an ecological critique of accounting, drawing on ecological economics, environmental politics, Earth system science and development studies. Those critical elements are tested by reference to two empirical settings that are gaining traction these days. On the one hand, it has been proposed that the circular economy could decouple green growth from the material and energy cycles of the biosphere by fostering the reuse, remanufacturing, and recycling of resources. On the other hand, the current COVID-19 pandemic is having an appalling impact on humanity, but its connection to the biosphere is ambiguous and has only started to be a subject of exploration.

The rest of the paper is structured as follows. The following section problematizes the notion of the “environment in crisis”. Section three discusses some elements for an ecological critique of accounting that section four then tests against the circular economy, and section five against the COVID-19 pandemic. The last section presents some concluding comments.

## 2. The environment in crisis: whose crisis?

We will use this special issue’s title to critically discuss the conceptualization and struggles involved in accounts of the Anthropocene. First, the environment in crisis is a conventional description of current ecological challenges that implies a separation between us, humanity, and the environment, the biosphere providing space and ecological resources for us to flourish. This portrayal of humanity above the material and energy cycles integrating the biosphere is characteristic of modernity, a humanity that is finally liberated from biophysical boundaries thanks to science and technological progress (Latour, 2015). However, the modernist distinction between nature and society has become obsolete in the sight of sustainable development challenges (Gallopín, Funtowicz, O’Connor, & Ravetz, 2001) and, particularly, of the Anthropocene, where human beings are not just driving global environmental change, but they are also transforming more fundamentally the Earth, i.e., its geology (Bebbington & Larrinaga, 2014; Bebbington et al., 2020a; Davies, 2016; Hornborg, 2015). Latour (2015) suggests that talking about an ecological crisis is a way of distancing ourselves from environmental problems. In this regard, it is pertinent to inquire whether the crisis refers to the environment or rather to our society that is seeing its safe operating space shrink. The safe operating space for humanity is a concept defined by Lade et al. (2020) “as those combinations of human impacts on the planetary boundaries that cause no planetary boundary to be transgressed” (p. 122). The notion of “planetary boundaries” refers to absolute biophysical limits in nine Earth-system processes, three of which, at least, are already beyond the proposed limits with likely devastating and potentially irreversible consequences for humanity (Lade et al., 2020; Rockström et al., 2009; Steffen et al., 2015). Therefore, rather than to the environment, the notion of a crisis would more adequately apply to humanity, whose activities are transgressing the very planetary boundaries that are, in turn, endangering its safe operating space to thrive. In other words, the global environment is changing at unprecedented rates, but it is humanity who is in crisis. This understanding of crisis is why scientists call to navigate “back towards the safe operating space for humanity” (Lade et al., 2020, p. 123, emphasis added).

Second, the notion of an environment in crisis suggests the existence of some transitory challenges that could be managed and eventually resolved (Latour, 2015). Even the Marxist understanding of crisis has a historical grounding, restricted to social relations, that is at odds with the geohistorical nature of Anthropocene’s challenges. If stratigraphers are correct, the Anthropocene is exceeding history; it produces changes of a scale similar to (or greater than) those that gave rise to the advent of the Holocene and the Neolithic revolution. Therefore, different authors have questioned the capacity of modern theories, constructed on the foundations of the Enlightenment conceptual emancipation of humanity from material needs, to theorize and offer the transformations required to live in the Anthropocene and devise a safe operating space for humanity (Hamilton, Bonneuil, & Gemenne, 2015; Latour, 2015). In this regard, an ecological perspective does not have a significant presence in Marxism (Martinez-Alier & Schlupmann, 1993) or in critical accounting (Chua, 1986; but see Andrew, 2000). In general, the ability of European critical theories to respond to contemporary ecological challenges is limited and compromised by their origin in modernity and European colonization (Gómez-Villegas & Larrinaga, 2021; Mignolo & Walsh, 2018), a system of thought that is idiosyncratic to a particular historical time that is being superseded by the geohistorical transformations of the Anthropocene.

For Latour (2018), it does not make sense to talk about an ecological crisis, with the challenges being much more radical as “the rug is pulled out from under your feet” (p. 8). Crisis is an interesting word: it currently denotes a turning point or a situation of instability, but the original Greek *krisis* derives from the verb *krinein*, which means deciding or separating. This sense of *krisis* applies to the choice that, according to Latour (2018), we are confronting between negotiating a space to house us or nourishing Trumpist denial discourses and the modernist “dreams of escaping” (p. 5). Moreover, the term

*critique* also developed from *krinein*, as judgment requires analysis, study, and reasoning, something that is pertinent for an ecological critique of accounting. It is in this sense that we think we need to talk of *humanity in crisis*: a humanity that faces the decision of choosing between returning to its safe operating space (Lade et al., 2020) or embracing the “dreams of escaping” (Latour, 2018). Such a decision requires a problematization that can gain from an ecological critique of accounting.

### 3. An ecological critique of accounting

This article can only offer an imprecise and interim set of suggestions as to what an ecological critique of accounting might look like. With this caveat in mind, we propose that, first, an ecological critique of accounting should analyze, study and judge any accounting model that is likely to contribute to the construction of the “dreams of escaping” by contrasting those representations with the inescapable and limited material and energy flows that provide the basis for humanity to flourish. While the human liberation from nature inspired the Enlightenment, this renewed critique needs to be inspired by an exploration of the limits imposed by the Earth (Latour, 2015). The “planetary boundaries” framework, ecological economics, or degrowth movements provide solid foundations for an ecological critique of accounting. The notion of degrowth covers different perspectives that challenge the *growth ideology* that remains unquestioned from the economic rationality, which has permeated numerous social spheres. Degrowth proposals have been made since the 1980s by critics such as Gorz (1988), who theorized the failure to cover human needs and the waste produced by consumerism due to the application of economic rationality. From the 1970s, economists Herman Daly, Nicholas Georgescu-Roegen, and Fritz Schumacher demonstrated that economic growth cannot be decoupled from Earth’s material and energy cycles and made different proposals to limit economic growth. In the last years, degrowth ideas have materialized in a movement accommodating different perspectives that challenge economic growth and, particularly, the dream of green growth (Banerjee, Jermier, Peredo, Perey, & Reichel, 2020).

Second, an ecological critique of accounting should problematize representations of production and consumption, drawing on unquestioned economic notions regarded as proxies for human well-being, such as growth, needs, or GDP (see Banerjee et al., 2020 for an early proposal in organization studies). Ecological economics and human-scale development (Max-Neef, 2006) provide insights for such problematization. For Max-Neef (2006), the human-scale development focuses on satisfying basic human needs and on an organic articulation between human beings and nature, between global processes and local behaviors, between planning and autonomy, and between civil society and the state. Max-Neef (2006) establishes a framework that distinguishes between needs (e.g., subsistence, affect, participation, identity and freedom) and satisfiers (e.g., food, shelter, or education) in the understanding that basic human needs are finite, identifiable and valid for all cultures. However, it is the relationship between basic needs and satisfiers that fluctuates across cultures. Although the proposition that increasing levels of material consumption do not necessarily lead to subjective well-being is far from new (Jackson, 2009), the discussion of a human-scale development allows problematizing routine representations of production and consumption. For example, the difference between basic needs and satisfiers could be mobilized to explore the interaction between the accounting construction of values with the Earth systems’ biophysical limits. Additionally, it could also inform a critique of how accounting contributes to the invisibility of unpaid labor and the informal economy in large segments of the world population, and of the productive communitarian micro-organizations where solidarity, identity, and community life are the prevailing logics, rather than productivity and competitiveness (Gómez-Villegas & Larrinaga, 2021).

Third, an ecological critique of accounting should consider the material, cultural and epistemic diversity and inequalities that characterize humanity (Latour, 2015; Mignolo & Walsh, 2018), as well as the conflicts and distributional aspects that might arise from diversity and inequality. Even the scientific decision of a particular date for the initiation of the Anthropocene is consequential since the so-called *Columbus exchange* could signal colonialism to be responsible for the Anthropocene, while later dates (Industrial Revolution) could point to capitalism and earlier ones could distribute responsibility more evenly among different peoples (Bebbington et al., 2020a). Although all humanity is affected by the Anthropocene, an ecological critique of accounting should consider the politics and distributional aspects of accounting models addressing environmental issues. Postcolonial perspectives or the decoloniality project could serve as inspiration for an ecological critique of accounting. Decoloniality (Mignolo & Walsh, 2018; Santos, 2014; Sauerbronn, Ayres, da Silva, & Lourenço, forthcoming) is a project of epistemological emancipation from what is referred to within the project as the *Eurocentric perspective*. In contrast to Western ontologies, including to that effect European critical social theories, founded on the centrality of the human being as external and above nature, the decoloniality project contends that alternative ontologies regard humanity as an internal element of nature itself (Mignolo & Walsh, 2018). Having an origin in Latin America, this perspective argues that colonization in this region was not only administrative and extractive but also produced domination in the ways of knowing that persists long after the liberation of the colonies (see also Gómez-Villegas & Larrinaga, 2021). Furthermore, the colonization of Latin America runs in parallel with modernity because modernity made coloniality possible and, in turn, it was the exploitation of American resources that launched modernity (Quijano, 2000). Considering the interplay between the Anthropocene and modernity and the relevance of conceiving the human fate as subject to the will of nature, the decoloniality project can provide new insights to study global inequalities. Decoloniality challenges Western epistemologies as well as the modern ontologies separating the humanity from nature.

Fourth, the analysis of the previous two points in particular suggests that an ecological critique of accounting is more likely to emerge from the margins of the academic community. The exploration of the limits imposed on us by nature, the problematization of production and consumption and the notion that we share a common Earth will entail transformations to build a safe operating space for humanity, where the lifestyle of the more affluent part of the world population could be on jeopardy (<https://www.footprintnetwork.org/>). Those transformations could affect established accounting researchers, who are relatively privileged global citizens and too invested in conventional ways of being an academic, in debates attracting their peers' attention, flying for conferences and seminars, but who seldom have an impact beyond their fields. Returning to the etymology of crisis, many of us are troubled by the *hypokrisis* (hypocrisy) of, for example, writing these lines about transformative changes and a living space for humanity while enjoying international academic conferences and touring. Deep down, many of us have dreams of escaping or just want to be oblivious of the situation because we feel that our important work deserves a slight footprint deficit. *Hypokrisis* is why we think that critical insights about accounting are likely to emerge from the margins of the accounting academia, for example, by scholars located in developing countries or by those esteemed Western scholars that try to push the limits of their investigation beyond the limits of convention.

In summary, it is not by denying our position in biophysical processes or by underestimating the challenges that humanity will overcome its crisis. A humanity in crisis needs to adapt and transform its modes of organization, production, and consumption to cope with the planet's absolute limitations. We contend that an ecological critique of accounting could foster this transformation by countering accounting models that may support the "dreams of escaping".

#### 4. Turning the circular economy

A number of narratives about the relationship between economic activity and the biosphere, conveyed by intergovernmental, governmental and business initiatives are converging around the notion of the "circular economy". For example, the EU has developed a Circular Economy Action Plan, included in the European Green Deal ([European Commission, 2020](#)). Likewise, the World Business Council for Sustainable Development has launched a Circular Economy Program to promote this concept among companies.

According to the circular economy narrative, the dominant *linear* economic system is characterized by an ecological flow of extraction, production, use, and dumping of materials and energy ([Korhonen, Honkasalo, & Seppälä, 2018](#)). However, absolute biophysical limits on our planet make production and consumption under the linear economic model unsustainable. Consequently, the circular economy has been proposed as an alternative that "maximizes the service produced from the linear nature-society-nature material and energy throughput flow. This is done by using cyclical material flows, renewable energy sources and cascading-type energy flows" ([Korhonen et al., 2018, p. 39](#)). The World Business Council for Sustainable Development contends that the circular economy requires "decoupling resource consumption and economic performance, through information sharing, new business models, supporting policies, science-based targets and value chain collaboration" ([WBCSD, 2021](#)). Likewise, the European Green Deal seeks to decouple economic growth and resource use ([European Commission, 2020](#)).

The circular economy is receiving increasing attention from accounting scholars ([Marrone, Linnenluecke, Richardson, & Smith, 2020](#)), and the journal *Accounting Forum* has announced a forthcoming special issue ([Arjaliès, Rodrigue, & Romi, 2021](#)). The idea that accounting should somehow facilitate the transformation of the linear economy into a circular economy is intuitive and compelling. As stated by proponents of natural capitalism (one of the antecedents of the circular economy):

*"What if our economy were organized not around the lifeless abstractions of neoclassical economics and accountancy but around the biological realities of nature? What if Generally Accepted Accounting Practice booked natural and human capital not as a free amenity in putative inexhaustible supply but as a finite and integrally valuable factor of production?"* ([Hawken, Lovins, & Lovins, 1999, p. 9](#)).

However, accounting research should scrutinize the promises of the circular economy to examine which are the roles that accounting could exactly play in such transformation. For that purpose, it is essential to note that the ideas brought about by the circular economy are not new but follow the lead of different practical proposals and scientific advances that have developed since the 1970s ([Korhonen et al., 2018](#)). For example, in the 1980s and 1990s, students of energy and resource-efficient solutions for sustainable development, notably around the Wuppertal Institute in Germany and the Rocky Mountain Institute in the United States ([Hawken et al., 1999; Weizsacker, Lovins, & Lovins, 1997](#)) packaged different organizational, market and technological designs intended to maximize the value of natural resources under the labels of "natural capitalism" and "factor four". Likewise, [Fitch-Roy, Benson, & Monciardini \(2020\)](#) argue that the EU existing circular economy policies are the result of reframing existing objectives and institutions, with little analysis of their previous effectiveness, with the momentum for radical innovations eroding because of competitiveness concerns and the upsurge of populist movements in EU countries (see also [Hobson, 2020](#)). Therefore, the critical question here is the mechanisms by which longstanding ideas and policies about eco-efficiency and closed-loop economies would produce different results under the circular economy label. If "past incrementalism has largely failed to effect system-wide change" ([Fitch-Roy et al., 2020, p. 996](#)), why should these ideas succeed with a new label? This general

debate about the circular economy is reminiscent of debates about incrementalism in environmental accounting, where an ecological critique of accounting would stand against the adaptations of conventional accounting models to improve management decision making, preferring a sound critique of the role that accounting technologies are playing in sustainability (Antonini, Beck, & Larrinaga, 2020).

Drawing on the previous ideas about an ecological critique of accounting and the ecological economics and environmental politics literatures, we outline some of the flaws of current articulations of the circular economy and develop some of their consequences for accounting. The circular economy is short of critical analyses, with most studies being celebratory, focusing on success stories but lacking conceptual and political analyses (Hobson, 2020). Nonetheless, from a conceptual perspective, the circular economy neglects the physical scale of the whole economic system, spatial and temporal system boundaries, and the limits imposed by consumption culture. Additionally, crucial political considerations are usually left out of the circular economy debate. Any critical inquiry of accounting in a circular economy context needs to pay attention to the following issues.

#### 4.1. The physical scale of the whole economic system

A closed-loop economy is a laudable target, and there are undoubtedly examples of progress in the direction of a circular economy. Cases of energy and resource-efficient solutions abound in the circular economy, natural capitalism, factor four, and similar literatures. However, eco-efficiency cannot achieve sustainable development because it does not consider the physical scale of the whole economic system that must operate within finite planetary boundaries. The field of ecological economics and the pioneering work of Georgescu-Roegen (1971) introduced the discussion of the physical limits of reusing and recycling resources, making the circular economy a virtually impossible endeavor. Keeping the circular economy spinning causes entropy given that it requires additional energy inputs and produces a share of waste as by-products. For example, by relying on electrical energy generated from fossil fuels, recycled paper production originates GHG emissions that are equivalent to those of producing virgin paper (van Ewijk, Stegemann, & Ekins, 2020). Moreover, those ideas do not adjust well to mining and extractive, as well as to some manufacturing industries (Camilleri, 2020).

The laws of physics make complete recycling virtually impossible and require paying attention to global limits. In this regard, we can envisage that critical ecological accounts should incorporate the Earth ecosystem's restrictions to address the links between human activities (e.g., corporations) and the planetary boundaries to visualize the limitations imposed on the economic system by the global physical scale. Critical accounts should question and problematize self-proclaimed circular economy achievements by corporations (Hobson, 2020), along the lines of existing environmental accounting analyses (Cho et al., 2012, 2015). For example, Valenzuela & Böhm (2017) criticized the advertised Apple circular programs vis-à-vis the more substantial environmental effects of the company's alleged planned obsolescence practices. Nevertheless, beyond the tactics of corporate disclosures to appease stakeholder demands, critical accounting should advance in theorizing the role that accounting technologies play in the connections and disconnections of organization, production, and consumption with and from the biosphere (Bebbington et al., 2020a).

#### 4.2. The spatial and temporal systems boundaries

Sustainable development requires considering the dynamic interaction between global society and biophysical processes in socio-ecological systems. In this regard, although circular economy projects tend to address problems at a local scale, they should be assessed by reference to their net contribution to global sustainability (Korhonen et al., 2018). However, this assessment becomes difficult as the practicable number of variables in a given analysis is limited, producing mismatches between global and local scales with accounting implications.

The existence of spatial system boundaries between organizations and geographies turns the assessment of circular economy projects into a challenging endeavor because of the "phenomena of problem displacement and problem shifting" (Korhonen et al., 2018, p. 42) by which environmental improvements can ensue in one location by shifting the problem to other parts of the system. For example, global supply chains and life cycles tend to displace environmental problems and the worst labor conditions to poorer countries with less effective enforcement systems. GHG emissions can be reduced in rich countries by displacing energy-intensive industries to developing countries. Electric cars improve air quality in prosperous cities but create environmental problems in electricity production, lithium mines, and batteries manufacturing (Tagliaferri et al., 2016). The ready-made apparel industry provides fast fashion to rich countries taking advantage of the low-income countries' wages to produce its garments.

From a critical perspective, it is necessary to recognize how accounting technologies define spaces where different activities can be evaluated (Miller & Power, 2013). Accounting representations intervene in different ways to set the spatial boundaries between organizations and geographies by signifying what is on each side of the boundary (Roberts, forthcoming). By establishing spatial boundaries, accounting confines the impact of circular economy projects to the reporting entity's specific geographical location, disconnecting those impacts from the absolute limitations signaled by the planetary boundaries. These ideas can be applied to inform an ecological critique of accounting focusing on reporting boundaries (Antonini et al., 2020) and supply chains to appraise circular economy projects' soundness.

Temporal boundaries create a different set of difficulties for circular economy projects due to the known business propensity to overrating short-term over long-term results. Circular economy projects mobilize environmental resources

producing short-term and long-term sustainability effects that need to be considered. However, Korhonen et al. (2018) suggest that circular economy projects tend to focus on short-term environmental gains. Accounting technologies should aim to make long-term environmental impacts visible to evaluate the (un)sustainability of humanity's behavioral patterns shaped by the development of circular economy initiatives. It is well known that discounting future climate change damages for investment appraisal has inconsistent effects in estimating the value of the future environmental impacts by promoting or discouraging investments (van den Bergh & Botzen, 2015). However, beyond the discounting cliché, Bebbington, Schneider, Stevenson, & Fox (2020b) open a new critical avenue, questioning how accounting is implicated in providing a substantially positive value to future fuel oil reserves that, according to global climate institutions, should not be burnt if we are to achieve the global GHG reduction targets.

#### 4.3. The limits imposed by consumption culture

The unprecedented scale of environmental changes in the planet has been conceptualized by Earth system science with the notion of coupled socio-ecological systems to account for the dynamics of social systems and their interaction with global biophysical processes. As conceived by students of the Earth system (Lade et al., 2020), the social system subsumes institutions and political aspects of the circular economy that are reviewed next: the limits imposed by consumption culture and the politics of circular economy.

To the dismay of circular economy proponents, and considering the consumption culture, eco-efficiency measures engender the annoying rebound effect and the Jevons' paradox, whereby efficiency improvements are offset by consumers deciding to employ the savings in increasing consumption. A visible example is offered by how the growing fuel efficiency in cars has been offset in the last decades by the consumer preference for larger vehicles (EPA, 2020). The popular Mini Cooper is now 61% bigger than it was in the 1950s<sup>1</sup>. A further example is provided by a widespread circular economy mechanism, sharing platforms that allow efficient use of otherwise underutilized assets. Such is the case of Airbnb that has made traveling cheaper, thereby increasing travel-related GHG emissions (Hobson, 2020) and overcrowding cities such as Barcelona or Venice.

Clube and Tennant (2020) use Max-Neef's theory of human-scale development to analyze various circular economy proposals, concluding that, unlike initial narratives with a more radical appetite, the current circular economy narrative is consistent with the view that economic growth can be decoupled from the resource base. In general, to deal with the physical limits to economic growth, circular economy critics point out that eco-efficiency might be irrelevant and that more transformative changes are required in the mindsets and the consumption culture that characterize current society (Clube & Tennant, 2020; Hobson, 2020; Korhonen et al., 2018). As expressed by Korhonen et al. (2018), quoting Daly, "even efficiently organized systems will collapse if their overall burden on their supporting systems exceeds a sustainable limit or as Daly says that also optimally loaded boats sink even though they would sink optimally" (p. 43).

Accounting is ill-equipped to deal with the question of sufficiency. However, it was discussed above that critical accounting should problematize how accounting representations contribute to making alternative forms of production and consumption invisible. The ideas of human-scale development proposed by Max-Neef (2006) might help this endeavor by bringing the difference between needs and satisfiers to light. Likewise, a critical inspection of the effects of different forms of representation is required. The development of environmental accounting draws on Eurocentric ways of knowing, and it is relevant to explore the existence of different epistemological matrixes that could potentially give rise to alternative ways for representing/accounting. A decoloniality perspective (Mignolo & Walsh, 2018; Santos, 2014) provides alternative epistemological lenses, allowing to explore how accounting makes alternative forms of production and consumption invisible.

#### 4.4. The politics of circular economy

As mentioned above, the idea of the circular economy is not new but follow previous movements, such as those around "natural capitalism" or "factor four" ideas. They all have in common a managerialist belief in sustainable technical solutions devised by entrepreneurial businesses that will be adopted by markets, as well as a preference for the illustration of success histories that present biological cycles in harmony with economic growth. This faith in the market hinders the circular economy's capacity to question the consumer culture (Hobson, 2020). It is constructing a "division of labor", which is problematic from a political perspective and ineffective for the generation of new models of consumption/production. The circular economy is championed by large companies that produce the thinking and the innovation (Hobson, 2020; Valenzuela & Böhm, 2017) (e.g., Apple's circular programme), while the consumer is kept "doing exactly that: consuming" (Hobson, 2020, p. 9), passive and deprived of any agency to decide how to produce and consume in the circular economy model.

We see many opportunities for the politicization of accounts of the circular economy that could problematize agency distribution among different groups. For example, accounting could be studied as playing subpolitical roles in defining spaces where different activities can be evaluated (Antonini et al., 2020). Additionally, valuation is one aspect where

<sup>1</sup> The car-size evolution. Zuto. Retrieved 03/02/2021, from <https://www.zuto.com/car-size-evolution/>

accounting's constitutive role could play a particularly salient role in the circular economy because what is valued becomes a resource, while what is not valued is considered a waste. [Korhonen et al. \(2018\)](#) highlight the importance of the context in making such classification. We would argue that accounting technologies, including valuation and risk assessment, could be relevant in fostering or preventing a true circular economy.

## 5. COVID-19: an unnatural virus

We think that the COVID-19 pandemic provides an exceptional empirical context to test the ideas that motivated this piece. We started this paper by making a case for the obsolescence of the nature/society divide to argue that humanity is in a *krisis*, and we finished last section by calling attention to the role of accounting in attributing resource/waste categories. Those ideas are relevant to any discussion about COVID-19 because, as [de Chadarevian and Raffaetà \(2021\)](#) contend, this virus challenges the distinction between nature and society. These authors remind us that, in fact, “nearly half of the human genome derives from genes acquired from other species, with viruses most likely acting as mediators” (p. 2). Moreover, with humans operating as the primary vector for the proliferation and mutation of viruses, viruses seem to be “both natural and human made” (p. 3). Additionally, viruses play essential ecological and evolutionary functions that are not always appreciated, even by virologists, as “viruses, it seems, are only noticed when something goes wrong” ([de Chadarevian & Raffaetà, 2021, p. 2](#)). This particular virus should not make us forget that viruses are precious ecological resources.

[Naidoo and Fisher \(2020\)](#) propose that “COVID-19 is a stress test of our globalized economy and of our global goals for a more sustainable planet” (p. 200). The virus has put humanity in a *krisis*, whereby humanity has the option to decide between transforming the COVID-19 pandemic into an opportunity for sustainable transition ([United Nations Economic and Social Council, 2020](#)) or letting us be carried away by the dreams of escaping from the biophysical processes of the Earth. In this regard, [Mostafanezhad \(2020\)](#) contends that this virus will restructure society and that the direction of this restructuring will crucially depend on the construction of particular narratives about this virus, which is inextricably political. COVID-19 has been denied, included in conspiracy theories, considered a natural disaster and an enemy. In the rest of this section, we will focus on two alternative narratives to test some elements of an ecological critique of accounting, as proposed in section three.

### 5.1. Narrative 1: COVID-19 as waste

COVID-19 is not an extraordinary natural event, but it is producing considerable human suffering, social disruptions, and economic hardship. According to the dominant narrative, the COVID-19 pandemic is a disaster with a natural origin. It has revealed the fragility of our societies and is wasting lives, as well as ecological and economic resources. During the pandemic, numbers produced by departments of public health authorities (hospital occupancy and incidence and transmission rates), statistical offices (GDP and unemployment rates), and companies (pandemic-related losses and business failures) have governed economic, social and personal life as in wartime. The fight against the virus has been described as a war against an external enemy, a war that is certainly producing casualties in the ranks of humans, but also in nature, with, for example, more than 1.5 billion face masks dumped into the oceans ([Phelps Bondaroff & Cooke, 2020](#)), creating a source of pollution because of the microplastics they contain ([Aragaw, 2020](#)). After the war, once the virus is finally defeated, with the “new normality”, economic recovery is imperative. Jobs, lifestyles, and consumption need to be back to regain GDP numbers and start reimbursing public debt.

An ecological critique of accounting should target the role that numbers are playing in economic, social, and personal governance. In addition to inquiring about the intervention of accounting numbers in tradeoffs between security and liberty, it is relevant to explore whether interventions of this nature could also be mobilized to confront the global ecological crisis. Such critical exploration could address the ethics and politics of using numbers to wage such kind of war against, for example, climate change. Likewise, representations of the “new normality”, built again upon accounting numbers, suggest that restructuring of society is unlikely to produce the transformative changes in mindsets and consumption culture that have been discussed above.

### 5.2. Narrative 2: viruses as resources

Viruses are vital for the integrity of ecosystems. However, one among hundreds of thousands or millions of viruses (i.e., COVID-19) is causing the current pandemic. Furthermore, while viruses are natural, it has been suggested that COVID-19 is somewhat unnatural or, more precisely, while the virus is biological, its proliferation is a social matter ([de Chadarevian & Raffaetà, 2021](#); [Mostafanezhad, 2020](#); [Naidoo & Fisher, 2020](#); [Skórka, Grzywacz, Moroń, & Lenda, 2020](#)). It is the disruption of viruses' original ecosystems by humans that allows them to jump, from animal to animal and then from animals to humans; likewise, it is the interconnectedness of global society that allows the virus to spread rapidly around the world ([Naidoo & Fisher, 2020](#)).

Following this line of reasoning, an ecological critique of accounting would antagonize accounting calculations of the social, economic, and ecological costs caused by COVID-19 with the ecological value of viruses to illustrate how the social

and the biological worlds are inextricably connected (de Chadarevian & Raffaetà, 2021). This critique could show how those figures are distorted by excluding social and ecological values (Banerjee et al., 2020), how pandemic costs are unequally distributed (Menton, Milanez, Souza, & Cruz, 2021), and how those calculations fail to consider global ecological limits (Naidoo & Fisher, 2020).

Distorted accounting numbers obscure information and hinder the learning that the COVID-19 *krisis* can yield to initiate a sustainable transition (a transformative new normality). One example concerns the lessons to be learned by the fact that global CO<sub>2</sub> emissions decreased during the first months of the pandemic due to the lockdowns in many countries (Le Quéré et al., 2020). The pandemic has demonstrated the influence of numbers in altering patterns of human production and consumption. Accounting potential is something to investigate in light of the limits imposed by the consumption culture mentioned in the previous section, including the politics involved in this use of numbers. Tourism is a case in point, considered a key driver of the pandemic spread and its primary economic victim (Mostafanezhad, 2020). Considering the global externalities of tourism or Max-Neef's distinction between needs and satisfiers could put tourism in a completely different light.

## 6. Concluding comments

Critical perspectives on accounting have been very active in emphasizing the social, historical, and institutional context in which accounting operates (Cooper & Sherer, 1984) but have been less interested in developing an ecological critique of accounting. This article has capitalized on the idea that the environment is in crisis to make a case for an ecological critique of accounting, which needs to decide between orchestrating an ecological space for humanity and the dreams of escaping the planetary limits.

Facing the ostensibly growing participation of accounting technologies in purported solutions to deal with ecological issues, we addressed two areas where (accounting) literature is emerging to test some ideas that could inform an ecological critique of accounting. Facing the possibility that an accounting literature on the circular economy and COVID-19 would reproduce trajectories that have contributed to current unsustainability, we think an ecological critique is well-timed.

We have reviewed the problematic nature of current conceptualizations of circular economy and COVID-19 from a sustainability perspective and explored a critique of accounting interventions in both areas. A crucial element of this critique is a sound engagement with (and understanding of) ecology, biology, and Earth system science to avoid conceptualizations of accounting for circular economy or accounting for COVID-19 that could make sense in the short-term from a business-centered or managerialist perspective, but would be socially and environmentally harmful, creating the illusion that it is possible to decouple socio-economic and biophysical systems.

This article draws on different disciplines, something that points towards the interest of engaging with ideas developed beyond accounting. In the case of an ecological critique of accounting, it is crucial to establish an exchange of ideas with ecological economics and other research areas, an exchange that needs to operate in both directions (Bebbington et al., 2020a). In drawing on ideas imported from ecological economics (eco-efficiency or rebound effects), Earth system science (planetary boundaries or systems boundaries), environmental politics (consumer culture), or development studies (human-scale development) we are able to extend the literature in critical accounting. However, considering the importance of accounting technologies in the processes analyzed, this discipline should also have the ambition of contributing with original concepts more broadly, i.e., in the opposite direction.

This piece is exploratory, and, consequently, the reasoning, conjectures, selection of cases, and analyses are imprecise and, indeed, leave room for improvement. In attempting to combine arguments from very different research traditions, we hope this essay provokes other researchers to challenge assumptions and think beyond the conventions that dominate our field of research. This is how we think an ecological critique of accounting can help us ward off the “dreams of escaping” and start to face the realities of the current ecological crisis.

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