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## AFTERWORD

### THE ALCHEMY OF THE CIRCULAR ECONOMY

Andrew Sanchez

The idea of the circular economy appeals to me, and I think I know why. I recycle my household rubbish wherever I can, and I try to avoid wasting things. I also conduct anthropological research about waste and what makes something economically valuable. So perhaps the appeal lies in a rational sense that the circular economy is simply a good solution to the everyday problem of what to do with leftover things. Or maybe it is rather an intellectual appeal that allows me to think about how the economy itself functions. However, neither of these explanations is wholly correct. What appeals to me most about the circular economy is that it gives me a comforting feeling of security, at a time when I am worried about the environment. I have an unpleasant suspicion that this feeling conceals the limits to just how circular the economy can ever be.

The idea of the circular economy assumes that technocratic intervention can reform economic life in ways that minimize the environmental impact of human action. In this imagination, processes of production and consumption can be synthesized into an elegant closed cycle, where all that is used is reused. The idea feels intuitively like the biological truth that things that are born will eventually rot, return to the earth and provide sustenance for new life. But it also feels like the technical fantasy of the 'perpetual motion' device that runs on power generated by that very motion itself (cf Schaffer 1995). I tend towards the latter interpretation, and in this chapter, I discuss the circular economy using the metaphor of alchemy. I argue that the fully circular economy is an unrealizable ambition, akin to the technological aspirations of alchemists, whose work sought attractive yet impossible solutions to material problems. The fully circular economy is a hopeful fantasy of control in an age of environmental crisis.

Alchemy was a proto-scientific form of chemistry developed between the first and twelfth centuries CE in China (Pregadio 2012),

Egypt (Festugière 2006), Arabia (Anawati 1996), India (Wujastyk 1984) and Europe (Halleux 1996).<sup>1</sup> Common to these traditions were frustrated experimental efforts to transform one base metal into another. The alchemists used an amalgam of methods that modern thinkers would usually now delineate as spiritual, magical and scientific (Newman, Mauskopf and Eddy 2014). Despite the folly of some of their aims, the alchemists were progressive. They believed that with enough collective ingenuity, humans could overcome obstacles and reshape the world. As recently as Isaac Newton's seventeenth-century forays into alchemy, such methods were understood to be compatible with the search for scientific, material truths (Gosden 2021: 384). Like the quest to transmute common metals into more valuable ones, the circular economy uses experimental technical work to strive towards intuitive possibilities that are nonetheless impossible.

This chapter will explain how a discussion of the alchemy of the circular economy reveals something broader about the nature of work and human society. The first part of the chapter discusses how the human appeal of the circular economy relates to environmental crisis. The second part discusses why the ideal of the circular economy is contradicted by the nature of human work.

### *The terminal anthropocene*

I remember when modern environmental crisis first became part of the popular global imagination. It started when I was a boy in the 1980s. At that time, the main threat to the planet was a nebulous thing called the Hole in the Ozone Layer. It had something to do with aerosol gases and was vaguely kin to a new human concern about the plight of whales, dolphins and the rainforests. Scientists had cautioned us about the terminal dangers of atmospheric pollution since the 1970s (Lovelock 1972), and environmental crises had long happened to millions of people impacted by industrial accidents and human-made famines (Austin 1967; Sen 1982). Such conditions have historically been felt more keenly by poor people, and those living in the Global South (cf

1. Alchemy emerged in unique forms in first-century China (Pregadio 2012) and tenth-century India (Wujastyk 1984). A third parallel form traces its development to fourth-century Egypt (Festugière 2006), seventh-century Arabia (Anawati 1996) and finally twelfth-century Europe (Halleux 1996).

Babidge 2019; Lipsett 2011). The unpleasant truth is that wealthy people in the Global North started to pay more attention to the environment when the crisis reached their own front doors.

For many people at the start of the twenty-first century, global environmental crisis was a vague threat that was just distant enough to be ignorable. For some other people, the very thought of human-made climate change was completely fantastical: they reasoned that the planet was too long-lived and expansive to be permanently impacted by human beings.<sup>2</sup> This way of thinking was still reasonably common until the 2010s. If you believed in climate change during that period, then it was frustrating that so many people did not share your assessment. But in a way that I am embarrassed to admit, it was also somehow comforting to have those voices in public discourse. After all, perhaps there was just the faintest chance that the climate sceptics might be right. If so, then everybody else would look foolish, but the planet would be safe. Those days of secret hope are now behind us, as droughts, wildfires, floods and hurricanes pose an existential threat to our ways of life. It seems likely that many of these catastrophic changes are not reversible on a timescale that is meaningful to human beings. At best, we have only the ability to stop things from becoming even worse, as an emerging global discourse of ecological inheritance worries about the planet that we leave to future generations (Weston 2022).

When I became an undergraduate student of social anthropology in the 2000s, one of the earliest things I learnt was that when people are faced with misfortune that seems beyond their control, they will try to explain it. When they do so, it may be in a manner that allows for human intent and action to have fantastical impacts upon the world. This is partly what anthropologists mean by ‘magic’, and it is usually supported by an internally rigorous rationality and logic (Evans-Pritchard 1937; Sperber 1985). That logic is where the distinction between magic and science grows hazy (cf Tambiah 1990), and is the space where the alchemists practiced their craft. The idea of the circular economy posits hopeful human intervention into desperate and overwhelming material conditions. The aspiration is grounded in a technocratic language of experimentation, belied by the fact that the total fulfilment of its aims is as implausible as the chemical transformation of lead into gold.

2. A similar assessment motivated Herman Melville to write in *Moby Dick* that the ocean was too vast and well populated for whales to be hunted to extinction (Melville 1994 [1851]: 435–9).

David Graeber argued that the circular economy speaks to us on the same compelling terms as the biological cycles of water and life itself. What makes a cycle so compelling is that it is simultaneously both a process of change and permanence, where the substance of things might transform, but the overall cycle ensures that everything ultimately returns to where it came from (Graeber 2012: 280). Similar observations have been made about human interest in the cyclical systems that relate death to the regeneration of life (Bloch and Parry 1982). However, despite the metaphorical resonances of the cycle in the human imagination, the circular economy is objectively different to such natural processes. This is because the circular economy's processes of reincorporation are neither inevitable nor complete.

It is the fundamental nature of economic action to generate excess and waste (cf Bataille 1988 [1967]). We can understand that waste as the condition of being temporarily out of value, which means that apparently unwanted things might become valuable again when located in the right social context (Sanchez 2020). However, not all things can be wholly reincorporated into the value cycle, and not all things are destined to be even partly reincorporated. For example, some forms of waste remain dangerous in a terminal environmental sense, and cannot be safely returned to the earth once they are drawn from it (see Ialenti 2022 on nuclear waste). Some other products of ingenious human work resist future transformation entirely and must remain in our soil, water, air and bodies, in the original hazardous form that we synthesized them. Here, David Bond's research about synthetic 'forever chemicals' is a good case in point (Bond 2021). These two examples are extreme ones, but they illustrate a more general point about the relationship between economy and environment: climate crisis cannot be averted by a techno-magical effort to reincorporate all the excess generated by economic action. In the face of existential threat, the technical ingenuity of the circular economy will not allow a growing human population to survive without people in developed nations also using less, having less and eating less.

The notion of a human civilization that progressively uses less is compelling but is at odds with a modernist notion of progress that still implicitly informs wider ideas about how human society should work (Berman 2010). These assumptions are integral to many understandings of human development, even those that are critical of growth-based economic models (cf Hickel 2017). My own idea of decent human progress is probably no different. As an anthropologist I care about people. My instinct is that I would like them to have a plentiful range

of food, pharmaceuticals, tools, computers and public transportation. It also seems important that people have the opportunity to do things beyond their narrow biological needs. This is an idea of development premised on the ability to flourish, not simply the ability to live (Sen 1985, 2001; Nussbaum 2011). Here is the tension at the heart of my anthropological engagement with climate crisis, and an explanation for why the idea of the circular economy appeals to me: I would like a progressive human civilization to be comprised of happy people that can consume lots of things. However, I would like us to do so without the evident environmental repercussions that come with that consumption. The ideal of the circular economy is the alchemy that promises to make this impossible thing happen.

The circular economy is an aspirational notion that couples anticipation of the future with a hopeful assessment of the socially transformative potential of innovation. In this regard, one might think of the circular economy as part of a broader affective human engagement with technoscience (cf. Adams, Murphy and Clarke 2009). In such an engagement, specialists are imagined to ingeniously solve problems for the benefit of everybody else. However, despite the long history of human ingenuity, latter-day alchemists cannot meet climate crisis by fully closing the cycle of consumption and production. The next section of the chapter relates these contradictions of the circular economy to ideas about work.

### *Work isn't perfect*

Every year I give a lecture to a large room full of university students, which is supposed to introduce them to economic anthropology. The challenge in that first lecture is to persuade the audience that the economy is worth thinking about and to convince them that it relates to social and political life (which is what most of the students are interested in).

My first economy lecture is really a sales pitch, which says that much of human life depends on the economy, that the economy is shaped by culture and politics and that anthropologists must understand such things to do their job properly. I tell the students that 'economy' refers to the processes by which humans produce, distribute and consume resources. Those processes are facilitated by transformative human action that allows a resource to become useful or desirable to other people. We call those transformative processes 'work'. I spend the rest

of the academic term showing why work and economic exchange are also political and cultural processes. I like giving these lectures because I believe in my own sales pitch, and I think that work speaks to the core of the human condition.

In the opening of this chapter, I said that the idea of the circular economy might have an intellectual appeal to somebody with academic interests like mine. That is partly true, and while writing this chapter, I have wondered whether the circular economy appeals because it offers a techno-magical answer to a problem about work, which is that work is never perfect in its value transformation. In the aftermath of a work action, something is usually either leftover or lost or expelled. With this problem in mind, I will use a discussion of two things to explain why the circular economy concept seems so magical. I will start by discussing the moral value of work, before addressing the economic value of work.

Popular understandings about the moral value of work tend to be shaped by two major ideas that seem opposed to one another but nonetheless coincide to produce a meaningful cultural complex. The first of these ideas is originally rooted in a European cultural and intellectual tradition. The idea says that work is toil. This means that work is hard, and a person who succeeds in avoiding it is privileged. That idea was first developed in a sustained way by Aristotle (Sinclair 1981). Aristotle's perspective was presumably shaped by his experiences of living in an elitist, slave-owning society. However, this idea still became important to how work was understood in European societies. As colonialist Europeans seized control of other people's economies, the idea travelled with them. The second idea is that even if work is toil, it is still somehow good. 'Good' in this sense means that work is the origin of all economic value and is necessary for social reproduction. This was a major assumption in the nineteenth-century European writing of Karl Marx, which reasoned that working for capitalism was toil, but work itself had both value and dignity (Marx 1976 [1867]). Marx's idea of work as both toil and social service made a significant impact on popular understandings of work, particularly in societies shaped by state socialist economies. However, the notion of work as social reproduction has a much longer and more culturally varied vintage: Olivia Harris explored as much in her analysis of Andean conceptions of work as the action that 'makes the earth bear fruit' (Harris 2000).

The idea of the circular economy is magical because it seems to cancel out the contradiction between the two things discussed earlier. A circular economy promises to allow the full value of social reproduction to be realized, while obscuring unproductive or exploitative toil. In

societies which paradoxically think that work is both toil and good at the same time, a circular economy allows for all economic action to be deemed socially reproductive. The waste and recycling industries can be reconceived as ‘making the earth bear fruit’, in a manner that unites all economic parties in shared complex of fundamentally decent action. Doing so elides the fact that the person who consumes recycled resources, or who facilitates the recycling of their own waste, may be necessarily complicit in the deeply exploitative structures of that industry. This is partly how the appeal of the circular economy relates to perceptions of the moral value of work.

The circular economy appeals to popular understandings about the economic value of work because the concept strives to negate a frustrating truth about the inefficiency of human action. Despite the resonances of cycles in the imagination, and despite the value placed on the progressive capacity of people to solve problems, whenever humans work, they always waste or expel something. Work is economically imperfect, and we have not reached a point of human ingenuity where this fact has been overcome. When you labour, you sweat. When you travel somewhere, you lose time. When you squeeze an orange, you can never extract all the juice. More broadly, there will be entropy and loss when one form of energy is converted into another. In our deliberate economic actions, we strive to resist such processes and subvert the natural orders of imperfection. Perfect cycles of value posit a new anthropogenic order that overcomes natural restraints on the transformative capacity of human work. Such an impulse is akin to alchemy and expresses the broader urge to assert the primacy of culture over nature (cf. Ortner 1974).

### *Conclusion*

In this chapter, I have tried to explain why people are attracted to the idea of the circular economy, and why that idea is based on a misunderstanding of the relationship between work and action. I have argued that no economy can ever be fully circular. However, this does not imply that the circular economy project is a wasted effort. Rather, my intent is to locate the circular economy within the most pressing environmental problems of our time and highlight the final limits of the project. In doing so, the critique is intended to inspire reflection on what else needs to be done.



The circular economy is a socially productive set of projects that can make a positive contribution to the challenge of environmental crisis. However, the circular economy can never be fully circular on the grand scale that the concept implies; such a techno-magical notion would tend to comfort those who engage with it. In doing so, a narrow focus on the possibilities of the circular economy diverts attention from the more radical total reduction in human consumption that environmental crisis calls for. Waste will always be generated by processes of production and consumption because human action is economically imperfect. Not all such waste has the capacity to be reincorporated back into the value cycle, and the efforts to do so may themselves be socially harmful. As attractive as the proposition may be, the economy cannot function like alchemy.

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