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# Reversing the Freight Train

Geoff Mann

Tomorrow's Economy: A Guide to Creating Healthy Green Growth
by Per Espen Stoknes.
MIT, 360 pp., £15.99, April, 978 0 262 54385 9

Less Is More: How Degrowth Will Save the World
by Jason Hickel.
Windmill, 318 pp., £10.99, February 2021, 978 1 78609 121 5

Post Growth: Life after Capitalism
by Tim Jackson.
Polity, 228 pp., £14.99, March 2021, 978 1 5095 4252 9

The Case for Degrowth
by Giorgos Kallis, Susan Paulson, Giacomo D'Alisa and Federico Demaria.
Polity, 140 pp., £9.99, September 2020, 978 1 5095 3563 7

It is hard to know how to talk about modern economies without talking about growth: productivity, entrepreneurial 'risk-taking' and the profit-driven cycle of expansion and accumulation. Economic growth is understood to be a natural or automatic process, its absence taken as evidence that we must somehow have got in its way. The purpose of economic policymaking is, accordingly, presented as a matter of loosening the 'fetters' on growth, as if the economy were a wealth-generating beast, always raring to go, if only we'd let it.

Given all this, it may come as a surprise to learn that the analysis of 'economic growth' in its contemporary sense is a relatively recent development. Some will say that Adam Smith was the first theorist of economic growth (a term he didn't use), but even as late as 1946, Evsey Domar, one of the founders of modern growth theory, could remark that the rate of growth was 'a concept which has been little used in economic theory'. That didn't remain true for much longer, as economists and policymakers wrestled with the legacy of the Depression, fears of postwar stagnation, and the geopolitics of decolonisation and the Cold War. The challenges of growth and industrialisation – the obstacles to achieving them, but also the dislocation and inequality they often entailed – weren't just a matter of investment, technology and productivity. They were also, in the words of Simon Kuznets, about 'the future prospect of underdeveloped countries within the orbit of the free world'.

Walt Rostow, who was, along with Kuznets, one of the field's most influential early thinkers, understood growth as the foundation of the postwar world order. His *Stages of Economic Growth*, published in 1960, was unsubtly subtitled 'A Non-Communist Manifesto'. According to what is now called the 'Rostovian' account, growth wasn't just the solution to domestic instability in advanced industrial economies and the remedy for the backwardness of 'traditional' (non-industrial) societies; it was also the antidote to socialism. There was no need for revolution: the managed markets of postwar capitalism would eventually, peacefully, deliver the fruits of modernisation – a non-violent, self-reinforcing alternative to expropriation and collectivisation. It wasn't clear, however, how traditional societies would respond to the inevitable disruption associated with integration into the global economy. 'How,' Rostow asked, 'should the traditional society react to the intrusion of a more advanced power: with cohesion, promptness and vigour, like the Japanese; by making a virtue of fecklessness, like the oppressed Irish of the 18th century; by slowly and reluctantly altering the traditional society, like the Chinese?'

Kuznets's hunch was that market-driven economic growth in traditional societies would initially worsen inequality, but in the long term reduce it. (A hypothesis which, despite his admission that it was '95 per cent speculation', was subsequently elevated to the status of a truth in the now notorious 'Kuznets curve'.) How could the West keep hold of the rest of the world during these initial shocks? How could the process be designed to 'avoid the fatally simple remedy of an authoritarian regime that would use the population as cannon-fodder in the fight for economic achievement'? 'Where is compound interest taking us?' Rostow asked on another occasion. 'Is it taking us to communism; or to the affluent suburbs?' Are we headed 'to destruction; to the moon; or where?' The task was to transform traditional societies in such a way that they could 'enjoy the blessings and choices opened up by the march of compound interest'.

In the years since Kuznets and Rostow, economic growth has arguably become the principal object of contemporary economics and economic policy, and the rate of increase in Gross Domestic Product (GDP) its standard measure. GDP represents the monetary value of a country's annual output, usually given on a per capita basis. It is commonly assumed that growth – compound growth, in fact – drives the economic miracle-making of modern capitalism, with the result that a rising GDP has become a policy goal in itself. As Rostow put it, the point was to make growth the economy's 'normal condition', as 'compound interest becomes built, as it were, into its habits and institutional structure.' In today's global economy, income or output growth, at every scale from the firm to the sovereign nation-state, is a primary determinant of the capacity to attract investment or borrow on financial markets, which is in turn a primary determinant of future growth, and so on in a compounding cycle.

Yet while GDP dominates economic policy, it has been subject to withering critique for decades, not least because it is so obviously a poor measure of human wellbeing. All 'output' contributes to GDP, no matter if it is in education or healthcare, fracked gas or weapons. It doesn't matter, either, if an increase in GDP is distributed between two rich people or among a million poor people: if you get hit by a bus, and it costs thousands to save you (or fail to), both you and the bus driver have made a positive contribution to GDP.

Attacks on the fetishisation of growth and the moral bankruptcy of believing that 'more' is the same as 'better' have an even longer history. John Stuart Mill (among others) argued that humans are best served by a society in which 'no one is poor, no one desires to be richer, nor has any reason to fear being thrust back by the efforts of others to push themselves forward.' More recently, the accusation has been that the economics of growth and the policies they underwrite confuse the quantitative process of growth for the qualitative process of development. Today, we know that countries whose per capita GDP is the highest or which grow the fastest aren't necessarily more peaceful or more democratic; neither do their citizens necessarily live healthier, longer or happier lives. Despite all this, GDP remains the standard measure of aggregate national economic activity, much to the chagrin of proponents of such alternatives as the Human

Development Index or the Genuine Progress Indication, which do make some attempt to gauge human wellbeing.

The precipitous decline in the planet's ecological stability, associated in particular with climate change, has turbocharged the critique of growth. It is becoming accepted wisdom that modern capitalism's relationship with the planet is increasingly extractive and destructive. A lunatic fringe refusing to 'believe' in climate change may not yet have bumbled off the edge of the earth, but the facts are now part of mainstream consciousness. Even the likes of the International Monetary Fund, the *Financial Times*, the European Central Bank, Deutsche Bank and the US military now acknowledge that modern economic growth has been ecologically destructive, and is a principal driver of the looming climate cataclysm.

The critical question is whether our current concatenation of crises is a product of the current mode of economic growth, or of economic growth per se. Is it possible to pursue economic growth in a way that doesn't make things worse for the planet and its inhabitants: can we, as they say, 'decouple' growth from greenhouse gas emissions, the decline in biodiversity and the destruction of habitats?

The prophets of decoupling belong to a motley but expanding crew of green-growthers, including financiers such as the former governor of the Bank of England Mark Carney, economists including Per Espen Stoknes of the Norwegian Business School and Mariana Mazzucato of University College London, and business gurus like Paul Hawken (co-author, with Hunter and Amory Lovins, of *Natural Capitalism: Creating the Next Industrial Revolution*, published in 1999). The green-growthers' pitch is an appeal to the magic of innovation and technology. Self-described 'techno-optimists', such as the *Financial Times* columnist Martin Sandbu, are vocal proponents of market-based climate policy (like carbon taxes and tradeable permit schemes), 'innovation economies' and 'net-zero' pledges: corporate and government commitments to large-scale projects that would supposedly allow us to continue business basically as usual while offsetting emissions with carbon capture and storage, tree-planting, and other carbon-sequestration programmes.

This is also the message we hear from advocates of the European Green Deal and renewable energy entrepreneurs. Once we get the right kind of growth – 'healthy growth' decoupled from capitalism's sordid environmental record – we won't have to worry about there being too much growth, and indeed should welcome it as the path to a more 'inclusive' capitalism and the means of paying for the coming transition to a high-tech, low-carbon world. 'Yes,' Stoknes says, 'the current version of capitalism may be wreaking havoc, but it's not that capitalism is broken.' In fact, he claims, 'denying the human psyche its subconscious yearning for growth' would be disastrous.

There is a no-nonsense realism behind some of the green-growthers' hopes for decoupling: growth-driven capitalism is what we've got; it isn't going away anytime soon; let's cross our fingers and work with it. One gets the sense that this is where Carney, now UN special envoy on climate action and finance, has ended up. He has rallied virtually every significant financial institution in the world (commanding between them some $130 trillion in total assets) to form the Glasgow Financial Alliance for Net Zero, with the aim of mobilising private sector financing for a 'global transition' to net zero by 2050. But the initiative seems driven more by desperation than hope. The same might be said of Mazzucato's exhortation to 'do capitalism differently'. It's as if time is so short, and human nature so rigid, that we have no other choice.

The realists tend to want more involvement from the state than green business boosters would like, precisely because they don't trust the invisible hand to deliver what's needed: a market-based escape from environmental disaster. Sometimes this position is presented as if it were above politics: whatever one feels about growth or alternatives to it, the unlikeliness of our being able to slow down the capitalist train in time compels the deployment of such emergency measures as national 'mobilisation' – analogous to the planned economy of the Second World War – or planetary interventions such as atmospheric solar radiation management.

'Degrowth' is the term now most closely associated with those who argue that the promise of green growth is at best a distraction, at worst an anaesthetic, cynically administered. In *Less Is More*, probably the best-known statement of the case for degrowth, Jason Hickel delivers a belated response to Rostow: 'Compound interest is incompatible with sustaining life on a delicately balanced living planet.' We cannot grow our way out of our predicament: growth is growth is growth. As Tim Jackson puts it in *Post Growth: Life after Capitalism*, 'Growth means more throughput' – the flow, in absolute terms, of energy and materials in the production process. 'More throughput means more impact. More impact means less planet. Endless growth – green or not – can only end up leading to no growth at all. There is no growth on a dead planet.' The mythology of decoupling is, as he puts it, a 'form of denial'.

Degrowthers call instead for purposeful and managed economic shrinkage, the rationale for which is straightforward: economic growth is destroying life on earth. Insofar as the kind of growth measured by GDP has historically involved increasing material and energy throughput on a finite planet, the argument is incontrovertible. But, as degrowthers acknowledge, simply shutting down a global economy that is ecologically disastrous could be socially disastrous instead, and the effects would be worst for the already poor and marginalised. Hence models of degrowth are never just about rollback or shutdown, but a combination of purposeful downsizing and global redistribution. Since 'reducing throughput is likely to lead to a reduction in the rate of GDP growth, or even a decline in GDP itself,' as Hickel says, 'we have to be prepared to manage that outcome in a safe and just way. This is what degrowth sets out to do.'

The response from green-growthers is predictable. 'The real argument,' as Stoknes sees it, 'is not about growth or degrowth. It's not about capitalism or the climate. It's not about money or your soul. It's not about finding an alternative to capitalism.' Rather, 'it's about redesigning what we have so it doesn't rip our earthly home to pieces in a gigantic, blind binge.' But by any reasonable standard of argument, the burden of proof doesn't lie with the degrowthers: it lies with those who hold fast to growth. Economic growth has pushed the planetary system to its limits, or past them, and history offers nothing to suggest that continued growth is compatible with the necessary reorientation of the global economy that until now it has hindered, and often actively undermined. Until the green-growthers can point to something, anything, that demonstrates their faith has helped realise a meaningful structural shift – not just towards compostable take-out packaging, or shopping malls with charging stations in the car park, but in the global economy as a whole – it is up to them to make the case, not their critics.

That said, the degrowthers do, of course, have questions to answer too, like how is this supposed to work? Among the most common policy proposals are such things as shifting to public and non-motorised transportation; institutionalising the purchase of second-hand products over new ones; moving to plant-based diets and prioritising agroecological methods; and improving efficiency and reducing energy use in existing buildings. All of which would make a big difference. But how would policies be put in place soon enough and on a large enough scale to make that difference? Indeed, it is a live question whether 'policy', at least in the way it is used in modern, bureaucratic, liberal democracies, is the right tool for the sweeping changes required – the move to a plant-based diet, to take just one example. This is to say nothing of the more radical institutional shifts that degrowthers like Giorgos Kallis and his co-authors call for in *The Case for*

*Degrowth*, such as limiting the reach of private property relations and reviving 'commoning' practices, or distributing technologies and financial support as reparations for the legacies of colonialism in the global south. Can we imagine 'policies' that realise transformations of the global political-economic order on this scale? That's before we even consider the question of who or what body has the political power to make all this happen.

One of the building blocks of modern economics is the 'production function', a simplified proposition about the operation of the nuts and bolts of the economy. It sets out the way key inputs – the 'factors of production', capital and labour (raw materials and land having largely been dispensed with long ago) – combine to produce an economy's output. Since any given collection of inputs could be used for a wide variety of purposes, the specifics are almost always assumed to be a function of technology and institutions: the relative contributions of capital and labour to production represent rational solutions to technical problems posed by budget constraints, market forces, current technologies and so on.

The general textbook form of the production function is $Q = f(K, L)$, which merely states that the quantity of output $Q$ is the result of mixing capital $K$ and labour $L$ according to a production process represented by a sequence of operations $f$. (In practice the function can be quite elaborate.) Economic growth, here represented by an increasing $Q$, is generally understood to be determined by an increase in the productivity of the combination of $K$ and $L$. That is the only way to achieve an increase in GDP per capita (otherwise, $Q$ rises only because $K$ and $L$ rise independently, not because we are combining them more productively).

The analogy is a little rough, but arguing for degrowth is something like proposing a reduction function. If a production function describes the purposeful combination of resources to increase output, a reduction function would describe how we might purposefully use capital and labour to reduce output, to shrink and slow our economies carefully and fairly. The task is to pull back from the precipices that growth-oriented production ignores or does not understand, to do what we can to undo the damage already done, and to reconstruct our economic relations with one another and with the non-human world.

The reduction function, if we could ever come up with it, would describe an extraordinarily helpful, and hopeful, set of (un)productive relationships. But who will design it, and who will implement the plans it generates? Mainstream economists tend to frame the production function as a technical question: how to use capital and labour most efficiently, to get the most $Q$ out of our $K$-$L$ mix. But in fact, the principal determinants of the production function are more political than technical. Power relations shape the real-world production process at every level, from the household to the global economy. In the stick-figure abstractions of introductory textbooks, production processes assemble themselves, but beyond an imaginary world in which capital and labour co-operate to realise a shared dream of efficiency, the power to marshal inputs, and to determine their relative quantities and necessary qualities, is a precondition for all production.

In other words, the form of the production function seems to identify two 'agents', which combine their energies to the ends of production, but in fact there is only one agent with the power to decide and act: capital. That won't be news to economists. In the standard production function, whatever the technical constraints, labour is an input like any other, and capital determines it. 'Labour' doesn't choose how much $L$ to allocate to this or that process or sector, or get together with capital and negotiate. As Alfred Marshall, the godfather of modern economics, put it in 1890, it is 'businessmen' who 'bring together the capital and the labour required for the work; they arrange or "engineer" its general plan, and superintend its minor details.' Everything is premised on the assumption that Capital decides, and Labour does what it's told.

In contrast to orthodox production functions, where the politics are obscured by a façade of objective rationality, the politics behind a reduction function would ideally be much more explicit. Virtually every degrowth advocate emphasises the terrible injustice of current arrangements, the 'democratic' basis of the degrowth project, and the equity and accountability it promises. Hickel speaks for the whole movement when he remarks that 'if our struggle for a more ecological economy is to succeed, we must seek to expand democracy wherever possible' – to international institutions like the IMF, to central banking, corporate governance, common-pool resource management and radical media and election finance reform.

Yet even for those of us who agree that the pursuit of perpetual growth is a disastrous premise on which to base our collective future, it is difficult to set aside the worry that degrowth will be a top-down, elite-driven process. How to reverse this freight train of a global economy? You can't just turn off the engine, or leave it to each wagon to organise its own efforts. The degrowth plan is a reduction in the size of the global economy – not, we are told, via austerity or intentional recession, but through careful planning, with a particular emphasis on shrinking the extraordinary consumption of the global north via economic restructuring and domestic and international redistribution.

Any such plan must envision a rapid and highly co-ordinated global programme of decommissioning. Our current growth-oriented regime has put most of the power and resources in very few hands, but that doesn't mean that liberating ourselves from the 'tyranny of growth' necessarily entails redemocratisation, and it is hard to imagine that the scale of the task can be addressed by localised leadership. How will it be co-ordinated, and by whom?

Depending on who you talk to, the answer might be anything from meditative self-reflection to social revolution. In its more metaphysical variations, degrowth strikes an unfortunate note of self-help; Liegey and Nelson, in *Exploring Degrowth*, tell us that degrowth's 'deep philosophy' can 'decolonise our growth imaginaries', while Jackson urges that we discover a 'virtuous flow'.* There is a fixation, in this strand of the conversation, with the second law of thermodynamics, according to which the total 'entropy' or disorder of a physical system and its surroundings must necessarily increase over time. ('A library that is not arranged becomes disarranged,' as Georges Perec put it. 'This is the example I was given to try to get me to understand what entropy was and which I have several times verified experimentally.') In Jackson's phrase, 'the most likely state of the world is chaos,' a sentiment that underwrites a lot of talk about degrowth's capacity to restore 'balance' to humanity's relation to the nonhuman world.

Like a lot of new agey analyses of the world's problems, this version of degrowth emphasises the good in the world we have, and suggests that acts of virtuous voluntarism can remake that world. (Perhaps this is the reason Jackson chooses the term 'post growth' over 'degrowth': 'post' may remain agnostic about what comes next, but retains a hint that it will be better.) It isn't clear to me whether this sort of approach to degrowth is a help or a hindrance – an emphasis on personal growth, diagrams of 'tensions in the human psyche' and reflection on one's 'values' certainly resonates with the individualism of our moment. There is in principle no reason this individualised approach should be incompatible with broader, even revolutionary, social and political change.

But Hickel's insistence that 'degrowth is part of the broader ecosocialist movement' does not enjoy unanimous support. While all its proponents reject the claim that degrowth is merely a historical rewinding – a nostalgic retreat to a supposedly kinder, gentler postwar capitalism – it is hard not to detect a bit of that in *Post Growth*, which opens with a lengthy paean to Robert F. Kennedy, is close to dismissive of a socialist alternative, and leans heavily on the critical liberalism of Hannah

Arendt (certainly no socialist). For Hickel, though, the tradition of democratic socialism – radical redistribution, public ownership, decommodification and decolonisation – provides at least a working answer to the questions of power and co-ordination that Jackson mostly avoids.

In its Sixth Assessment Report (Working Group II), released in February, the Intergovernmental Panel on Climate Change explicitly considered the degrowth analysis for the first time: 'Linking development to past and current modes of economic growth creates significant challenges for Climate Resilient Development, as it implies that the very processes that have contributed to current climate challenges, including economic growth and the resource use and energy regimes it relies upon, are also the pathways to improvements in human wellbeing.' The term 'degrowth' may not yet appear in the IPCC's Summary for Policymakers – notoriously diluted by the member-government approval process – but a shift in the range of ideas circulating in the halls of powerful institutions is underway, and not just at the IPCC. Is this evidence of the dissemination of a degrowth sensibility? Or is it proof of what some socialist critics of degrowth have said all along: that it is an elite-driven programme of middle-class anxiety about 'excess consumption'?

In that respect, there is a danger that degrowth gets caught, despite its advocates' intentions, in the political ruts carved by mid-20th century debates over 'development'. Economists like Rostow and Kuznets helped shape these debates. As I have said, they were accused of mistaking growth for development, but that critique is too simple. As the peripatetic Austrian economist Joseph Schumpeter remarked in 1934, development, as distinct from 'mere growth', 'is that kind of change arising from within the system which so displaces its equilibrium point that the new one cannot be reached from the old one by infinitesimal steps. Add successively as many mail coaches as you please, you will never get a railway thereby.' Development, like degrowth, named a process whereby society became something other than it had been, and also served as a model which other political projects could emulate.

But framing degrowth as the 21st-century version of development carries significant risks. Development, though it had some popular moments, was largely driven by global and domestic elites, and it depended on mass recruitment to a programme whose ends, if not always its means, were already determined. Degrowthers too should avoid thinking of themselves as having identified a civilisational lodestone to which all 'good' politics are oriented. But that ship may have sailed. Many degrowthers believe they are saving human civilisation (take a look at the subtitle of *Less Is More*). At a historical moment of such precarity, their 'rationality' can seem the only way forward, and politics can appear as an obstacle. The problem is that rescue missions of this sort are almost always elite-driven, precisely because one of the things that defines the elite is its unquestioned assumption that it is responsible for civilisation.

Unlike many of their technocratic predecessors, however, some advocates of degrowth – who are, it must be said, mostly members of the elite from the global north – recognise this fatal flaw. That's why Hickel and others are so eager to link it to other struggles (along with colleagues like Kallis and Paulson, Hickel frequently describes degrowth as by definition 'a demand for decolonisation'). They are engaged in an effort to transform degrowth into a popular movement, to build a mass political base for a programme designed, for the most part, without politics in mind.

Efforts of this kind tend to be uphill battles. You could say that the environmental movement more broadly has been attempting something like this for the last half-century, and while it has had significant successes, a sustained, diverse and international mass base has yet to materialise. Like that movement, degrowth's most prominent advocates too often act as if they already have the answers to every question, even before it has been asked. Kallis and his co-authors cite research showing that in parts of the global south, ‘the term degrowth is not appealing, and does not match people’s demands.’ But that doesn’t prevent degrowthers from frequently recruiting to the cause everything from the peasant movement Via Campesina to Indigenous blockades at Standing Rock. The claim is that these are earnest acts of solidarity. Perhaps, but such links must be forged from both sides. That will require more politics, less programme and a lot of humility.


The LRB Podcast
Green Growth and Degrowth

*Listen to Geoff Mann talk to James Butler about this piece on the LRB Podcast.*

## Footnotes

* *Exploring Degrowth: A Critical Guide* by Vincent Liegey and Anitra Nelson (Pluto, 196 pp., £16.99, August 2020, 978 0 7453 4202 3).

# Letters

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Geoff Mann is right to argue that the decoupling of growth from emissions could never take place quickly enough to constitute an effective climate mitigation strategy (*LRB*, 18 August). The evidence suggests that green growth is a fantasy, and that some kind of degrowth is necessary. How might this be achieved? Mann discusses the 'reduction function' (a kind-of reverse 'production function'). In fact, degrowth proposals are more numerous, diverse and sophisticated than this suggests, though it is useful to aggregate the factors involved into a simple mathematical form. We could see this as a more advanced version of the IPAT function (ecological Impact = Population x Affluence x Technology). Fundamentally, however, degrowth – the planned contraction of economic activity to achieve a degree of well-being for all – will require us to resist delegating complex questions to some external rationality or 'the market', and instead to work out how (and how much) we want to produce, invest and consume, and to organise collectively to that end.

Mann worries that degrowth will be a 'top-down, elite-driven process'. This fear isn't new; critics of 'sustainable development' used to argue that it would lead to dictatorship. While I agree that we should be wary of all elite efforts to advance social cuts in the form of eco-austerity, I don't see why elites would want to promote degrowth, which is after all a radically egalitarian proposal to end luxury and overconsumption, level incomes and challenge the primacy of accumulation. Elites should worry about degrowth precisely because it would mean the end of extreme wealth.

Mann argues that degrowthers should be wary of getting caught 'in the political ruts carved by mid-20th century debates over "development"': there is a danger in 'thinking of themselves as having identified a civilisational lodestone to which all "good" politics are oriented.' This is strange. Historically, degrowth was an offshoot of the discourse of 'post-development', whose raison d'être was to criticise the development paradigm (growth-based capitalism). Twenty years later, degrowth has become stridently decolonialist, bound to the position that the global North's 'imperial mode of living' is made possible by the social-ecological exploitation of everyone else. In *The Future Is Degrowth*, just out from Verso, my co-authors and I make the case for a 'pluriverse', a world in which many worlds fit, in contrast to the universalising mission of 'development'.

Fundamentally, degrowth has a utopian agenda. It radicalises debates about the future of sustainability, economics and systemic change. Beyond the techno-optimistic illusions of green growth and other false solutions, it offers a framework in which we can begin tackling the right kinds of question.

**Matthias Schmelzer**
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'By any reasonable standard of argument,' Geoff Mann writes, 'the burden of proof doesn't lie with the degrowthers: it lies with those who hold fast to growth.' But this is the standard of elites in the global North. Given the severely uneven distribution of water, energy, education and health in the world, a just form of degrowth implies a degree of redistribution that is not on offer.

What's more, when a billion Asians were lifted out of poverty through international trade to the detriment of the living standards of blue-collar workers in industrial countries, the political repercussions were toxic: Trump, Brexit and the rise of the far right. Degrowth without a level of redistribution for which we have no precedent or politically palatable mechanisms will result in a neo-colonialist freezing of inequalities. For instance, the World Bank, of which the US is by far the most powerful member, has recently decided to stop financing the fossil fuel industry in developing countries even where it could transform their growth. At the same time, the US is becoming once more the world's largest producer of fossil fuels.

Over the past twenty years, the world has reduced the energy intensity of its GDP by 1.5 per cent per year; the corresponding figure for China is 2.8 per cent. We need to double that pace to cap the rise in global temperatures below 2°C. This will require decisive intervention, but it is not a fantasy: there is a trend to build on. By any reasonable standard of evidence, if you want to reduce global inequalities, green growth is better than degrowth.

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Geoff Mann, in his essay on 'degrowth', does not mention perhaps the most expedient means of bringing about a 'slow down' or 'reversal': co-operatives (*LRB*, 18 August). We have known for a long time that we have enough – more than enough. The question is how do we share? The Mondragon Corporation is a 'co-operative of co-operatives' in the Basque region of Spain, comprising 95 co-operatives and fourteen research and development centres. It was formed in 1956 when a group of engineers from the local metalworks broke off to create their own worker-owned factory, producing paraffin heaters and gas cookers. Mondragon's industrial co-operatives still produce household appliances, and its partners now include insurance co-operatives, human resources co-operatives and other enterprises needed to constitute an economic ecosystem.

Mondragon's principles are based on those of the Rochdale Pioneers. Each worker is a partial owner in the means of production, and cannot sell their shares; there are no outside shareholders. Each worker gets one vote in company decision-making, and is eligible for election to the board of directors. The highest-paid worker is paid no more than six times the wage of the lowest-paid worker. The result is a model of stable, equitable industrial development that hasn't replaced the goal of communal wellbeing with the illusion of unlimited growth in GDP.

**Renée Roden**
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