A proposal for my three Greens political representatives in Queensland:

- Jonathan Sriranganathan
 - o Brisbane City Councillor for the Gabba Ward
- Amy MacMahon
 - State MP for South Brisbane
- Max Chandler-Mather
 - \circ MHR for Griffith

To examine the merits of an alternative political economy with the future aim of putting us on a pathway to a socially just and ecologically sustainable future.

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Introduction

Our current economic system is unsustainable. For over five decades we have been aware of resource limitations and ecological dangers of living on a fragile planet. In that time, we have made no progress living in balance with planetary systems nor within an equitable social system. Both the climate crisis and the global financial crisis are testament to these chronic issues.

I am requesting that you examine the merits of an alternative political economy with the future aim of putting us on a pathway to a socially just and ecologically sustainable future. That alternative political economy I am suggesting is known as "degrowth", succinctly defined by authors and academics Matthias Schmelzer, Andrea Vetter and Aaron Vansintjan (2022) in the following terms:

"Degrowth is a term that is increasingly mobilized by scholars and activists to criticise the hegemony of growth – and a proposal for a radical reorganization of society that leads to a drastic reduction in the use of energy and resources and that is deemed necessary, desirable and possible. Degrowth starts from the fact that further economic growth in industrialized countries is unsustainable."

In recognising the need to develop an alternative political economy we are reminded of the biggest and most urgent threat to our planet and wellbeing by the fossil fuel industry: its history, its impact, its continuing use, and the blatant disregard for the future.

Although there has been a withdrawal from coal in the past few years there are many countries, including the US and Australia, that have plans on the drawing board or are constructing new plants that can have lifespans of decades threatening our carbon budgets.

At the recent COP27 conference in Egypt leaders and activists from the global South, who bear the brunt of climate impacts put the blame squarely on the capitalist system and called for an end to fossil fuels and denounced the presence of fossil fuel companies at the conference and demanded their expulsion from the meeting (Radford *Green Left Weekly* November 22, 2022).

The world's 20 largest fossil fuel companies – many of which support the Paris Agreement, are planning to invest US\$ 932 billion on developing new oil and gas fields over the next nine years (Radford *GLW* November22,2022).

At the same conference in Egypt on November 15, Minister for Climate Change and Energy Chris Bowen boasted "Australia is back as a constructive, positive and willing climate collaborator." (Hinman *GLW* November 22, 2022). Bowen smugly told the *Australian Financial Review* before he left for Egypt that the continued use of gas was "inevitable". It was a different Minister Bowen that conceded, in the final parliamentary sitting day of the year that Australia was not going to deliver on its climate promises. Labor's already too low 43 percent emissions cuts by 2030 in its *Climate Change Act 2022* is not going to be met, Bowen said, suggesting it will be closer to 40 percent (Hinman *GLW* December 13, 2022).

Bowen's revelations, as part of the *Annual Climate Change Statement*, didn't seem to surprise many, says Pip Hinman. However, the June edition of the *Quarterly Gas Inventory* said, while emissions intensity of the economy continued its long-term decline, national emissions had started to climb again. The longer-term decline in carbon dioxide is due to the shift in electricity generation away from coal towards renewables, it said. Mitigating this, however, is the long-term growth in the economy and transport activity "as well as the expansion of LNG (liquid natural gas) exports". Australia accounts for about 20 percent of the global LNG exports and has the largest capacity in operation, outstripping Qatar and the US. Chevron Australia has one of its largest LNG projects in Australia on Barrow Island, with a projected lifespan of 40 years. The Climate Council said the government's climate change statement "sends a stark warning" that the burning of fossil fuels such as gas, coal and oil "is accelerating with severe consequences already being felt by Australians here and now".

As climate change impacts our Pacific neighbours, Environment Minister Tania Plibersek is considering many more fossil fuel projects than the 10 offshore new oil and gas projects that Resources Minister Madeleine King has approved since last May. King is supporting Woodside's controversial Scarborough gas project on the Burrup Peninsular in northern WA, and PM Anthony Albanese has done the same for Santos' coal seam gas project near Narrabri in NSW (Hinman *GLW* December 13,2022). Traditional owners in both places have been campaigning against these projects for many years. The Climate Council has estimated the amount Australia spends on fossil fuel subsidies is \$ 11.6 billion a year and rising, with the federal government providing the lion's share.

Of course, this conduct has striking consequences. Just 23 rich countries, including Australia, are responsible for half of all historical emissions of the main greenhouse gas, carbon dioxide, according to data collected by the Global Carbon Project (Seccomb *The Saturday Paper* November 12-18, 2022). Global temperatures have risen by around an average of 1.1 degrees since pre-industrial times and precipitated rapidly growing numbers of extreme weather events. According to the UN Office for Disaster Risk Reduction (UNDRR), the number of global climate-related disasters for the period 2000 to 2019 was 6,681, an increase of about 83 percent over 1980 to 1999. There were more

droughts, fires and heat events. It's estimated that there were 21.3 million refugees globally at the end of 2021, more than double the 10.5 million a decade ago. According to the UN High Commission for Refugees (UNHCR), climate change is a "vulnerability multiplier" that exacerbates drivers of displacement. At least 90 percent of refugees under the UNHCR's mandate come from countries most vulnerable to the climate emergency, and it was possible the number of displaced persons by climate change could climb to a billion by 2050 (Seccomb *TSP* November12-18,2022).

Nowhere is this more manifest than in the Horn of Africa where millions of people across Somalia, Ethiopia and Kenya are on the move searching for food and water. "Famine is at the door," UN emergency relief coordinator warned in September during a visit to Somalia. The world is "receiving a final warning," he said. (Wade *Sydney Morning Herald* October 14, 2022).

At the end of August floods swept across Pakistan, killing more than 1400 people and displacing up to 50 million of the nation's 220 million citizens as it inundated a third of the country. "The Pakistani people are facing a monsoon on steroids – the relentless impact of epochal levels of rain and flooding, "said the UN Secretary General Antonio Guterres, calling on the world to stop "sleepwalking towards destruction of our planet by climate change." Apart from the catastrophe facing one of the world's poorest and most populous nations, what is worrying scientists is that the extreme weather crippling Pakistan is echoing around the world. Records for flood, fire and drought have tumbled across the world this year (O'malley SMH September 3, 2022). Prior to the COP 27 meeting in Egypt late last year the UN Secretary General issued blunt criticism of leaders and their performance since COP 26 in Glasgow the previous year. The world, he said was failing fast on its Paris Agreement goal of holding warming to 1.5 degrees. "We have seen appalling images from Pakistan, and this is just at 1.2 degrees of global warming, and we are heading for over three degrees," he said, "We need direction and leadership now." (O'Malley SMH September 24,2022).

Along with the examples of the Horn of Africa and devastation in Pakistan, the past two years have witnessed an unprecedented heatwave in Europe, the drought in China and the megadrought in the US together with Greenland's collapsing icecap. John Hewson, professor at the ANU Crawford School of Public Policy and former liberal opposition leader, adds that in Australia we face La Nina for the third consecutive year, foreshadowing another wet summer with more flooding (*The Saturday Paper* September 24-30, 2022).

The concern, Hewson continues, is we will fail to contain global warming to the Paris Agreement to an increase well below 2 degrees (preferably just 1.5 degrees), with what will be catastrophic consequences for the planet. The US

Special Presidential envoy for climate John Kerry, has warned of the possibility of 3.7 degrees warming even if all countries meet their Paris commitments. And although the 2021 COP 26 in Glasgow was said to have produced a firming of intentions and commitments, this has not been matched by policy action to cut greenhouse gas emissions. Indeed, the risks have risen as governments continue to rely on – and develop – fossil fuel projects and maintain subsidies to fossil fuel companies, he added.

Recently Australia had an unedifying debate about a 2030 target for emissions reduction, on the way to our commitment for net zero by 2050, says the professor. Yet as was demonstrated in the report to the Climate Targets Panel - of which he was a member, along with other scientists and experts – using the government carbon budget model and official data, the 2030 requirement should be closer to 70 percent reduction in emissions.

So even though the Albanese government has taken an important step in the right direction, it is not enough for us to achieve our Paris commitments. In crude terms the world needs to cut emissions by about 50 percent by 2030 to avoid catastrophic climate change.

Perhaps the most disappointing outcome of Cop 26 was the summit still enabled plans to burn fossil fuels well past what is allowable to limit warming to 1.5 degrees, says Professor Hewson. The Intergovernmental Panel on Climate Change (IPCC) makes it abundantly clear just how significant that 50 percent reduction is to meet the Paris Agreement Target.

The IMF has pointed out that fossil fuel subsidies were \$5.9 trillion in 2020 – dwarfing the amount developed countries are prepared to spend on financing climate change adaptation. Governments seem to have lost sense of their carbon budgets and how easily they can blow them up by continuing to burn fossil fuels. Many governments still have plans to continue to expand fossil fuel industries. Britain has about 50 new projects in the pipeline, says Hewson. In the US, President Joe Biden has struggled to keep in place a moratorium on new oil and gas leases on federal land.

In November last year Australia had 72 new coal projects and 44 new gas projects under development – not prospective – including new gas fields such as Beetaloo and Canning gas basins in northern Australia, supplemented by significant subsidies. It has been estimated the new projects would double Australia's coal and gas production, emitting some 1.7 billion tonnes of greenhouse gases a year. Unfortunately, says John Hewson, it is easier for politicians to boast about emissions reduction targets than it is to do what is right to validate those commitments. It demands genuine leadership by governments willing to take their voters into their confidence and explain what is necessary and why in delivering a just and fair transition. The cost of inaction will be catastrophic for our government, for our nation and for the planet. Professor Hewson finished with: "The key question to be put to government is, what price for humanity's survival?" (*The Saturday Paper* September 24-30, 2022).

And we might add that a political economic system that fosters this unconscionable and reprehensible conduct is past its use-by date.

The following submission is made up of half a dozen writers each of whom appear to be saying something special and commendable. It is made up of extracts from their writing for you to contemplate, juxtaposed to make a fuller story by using their words, guaranteeing there is no distortion, embellishment or misinterpretation.

The Case for Degrowth

A few weeks before a December 2018 meeting was due in Catowice, Poland to review the Paris Climate Agreement, the Intergovernmental Panel on Climate Change (IPCC) released their latest climate report on October 8, 2018. Both as a wakeup call and an implicit but muted entreaty to do more, it was coauthored by 91 scientists and academics from 40 countries. The report called for net zero carbon dioxide emissions by 2050 as the only way to ensure runaway climate change is avoided.

If current rates of carbon pollution rates continue, global temperatures will surpass the internationally agreed global warming limit of a rise of 1.5 degrees Celsius above pre-industrial levels sometime between 2030 and 2052. The IPCC report notes that the Paris Agreement's current voluntary commitments which supposedly agreed to stop global warming at "well below" 2 degrees, will not limit global warming to a rise of less than 1.5 degrees.

By limiting global warming to 1.5 degrees, the report says, the world has a better chance to reduce dangerous ocean warming and acidity, which threaten marine biodiversity, fisheries, coral reefs and sea ice. Sea level rises would be limited meaning "greater opportunities for adaptation in the human and ecological systems of small islands, low-lying coastal areas and deltas", the report notes.

But to have the best chance of preventing runaway climate change, global net carbon dioxide emissions must decline by 45 percent from 2010 levels by 2030, reaching net zero around 2050.

For this to happen there would need to be a dramatic change in current policy settings in most of the industrialized world. There would need to be "rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems", the report said.

The IPCC called for "sustainable development" as the "best support for social and systems transition".

However, as alarming as the IPCC report is there were some who were critical of it as being overly conservative by understating or underestimating the problem: Speaking to the *Guardian* of October9, in the wake of the report, one observer said: "It fails to focus on the weakest link of the climate chain – the self-

reinforcing feedbacks which, if allowed to continue, will accelerate global warming and risks tipping points and runaway warming".

Quoted in the same October 9 *Guardian* article about the dangers of ignoring potential tipping points, Nobel laureate Mario Monna, who shared the award for chemistry in 1995 for his work on ozone depletion, added that: "With its description of the increasing impacts that lie ahead, the IPCC understates a key risk: "That self-reinforcing feedback loops could push the system into chaos before we have time to tame our energy system, and other sources of climate pollution".

It is most likely that Mario Monna and others had read an earlier report on the growing dangers of global warming.

Scientific research published by Will Steffen, Johan Rockstrom and others from the Stockholm Resilience Centre on August 6, 2018 and unmentioned in Australian media made front-page news overseas: The *Guardian* declared that a "Domino –effect of climate events could move Earth into a 'hothouse' state". The *New York Times* warned of a 'World at risk of heading towards irreversible "hothouse' state".

The basis for those excited headlines was an article titled, "Trajectories of the Earth System in the Anthropocene", published in the Proceedings of the National Academy of Sciences (PNAS).

(This report of the research by Ian Angus, author of *Facing the Anthropocene*, 2016, appeared in the August edition of *Links Journal of Socialist Renewal* – see 2 images below).

The authors of this paper argue that: "Feedback processes within the Earth System coupled with direct human degradation of the biosphere may play a more important role than normally assumed". In this context they ask four questions:

- 1. "Is there a planetary threshold in the trajectory of the Earth System that, if crossed, could prevent stabilization in a range of intermediate temperature rises?
- 2. "Given our understanding of geophysical and biosphere feedbacks intrinsic to the Earth System, where might such a threshold be?

- 3. "If a threshold is crossed, what are the implications, especially for the wellbeing of human societies?
- 4. "What human actions could create a pathway that would steer the Earth System away from the potential threshold and toward the maintenance of interglacial-like conditions?"

The long-term evolution of the Earth System is influenced by a multitude of cycles and feedbacks that weaken or amplify climate changes, by controlling the movement of matter and energy in the oceans, soil and atmosphere.

As the Earth warms, positive (amplifying) feedbacks are becoming stronger. The authors identify ten that have global impacts and that could be radically accelerated by small temperature increases, including: Thawing of permafrost; release of ocean floor methane hydrates; weakening land and oceanic carbon dioxide absorption; increasing bacterial respiration in the oceans; dieback of Amazon and/or boreal forests; reduced northern snow cover; loss of Arctic and/or Antarctic Sea ice; and melting of polar ice sheets.



Figure 1: Potential tipping cascades. Individual tipping elements are colour coded according to estimated temperature thresholds. Arrows show potential interactions (PNAS).

Any of these could substantially accelerate global warming and if one passes a tipping point, it may trigger a "tipping cascade", permanently accelerating others: "For example, tipping (loss) of the Greenland ice sheet could trigger a critical transition in the Atlantic Meridional Ocean Circulation (AMOC), which could together, by causing sea-level rise and Southern Ocean heat accumulation accelerate ice loss from the East Antarctic ice sheet".

Figure 1 shows potential tipping cascades identified in this paper.

The evidence of past climate shifts indicates any of them could occur at temperatures and carbon dioxide concentrations that are likely to be reached in this century if business as usual continues – and some could occur before 2040.

The authors write:

"Current rates of human-driven climate change far exceed the rates of change driven by geophysical or biosphere forces that have altered the Earth System Trajectory in the past; even abrupt geophysical events do not approach current rates of human-driven change...

"In terms of their influence on the carbon cycle and climate, the human-driven changes of the Anthropocene are beginning to match or exceed the rates of change that drove past, relatively sudden mass extinction events, and are essentially irreversible".

Continuing business as usual could lock us into a trajectory for Hothouse Earth, and the point of no return, beyond which stabilization will be impossible. This may be reached when the average global temperature rises to 2.0 degrees Celsius above the pre-industrial level. In fact, "even if the Paris Accord target of a 1.5 to 2.0 degrees Celsius rise in temperature is met, we cannot exclude the risk that a cascade of feedbacks could push the Earth System irreversibly into a "Hothouse Earth" pathway.

For over a million years, Earth's climate has oscillated between glacial and nonglacial states, in the 100,000-year cycle shown schematically in the lower left quadrant of figure 2. Underlying that pattern are long-term shifts in Earth's orbit and axis known as Milankovic cycles.

If they still had influence on our climate, we would now be heading back into a glacial age, but in the past two centuries their impact has been overridden by greenhouse gas concentrations far greater than any seen during the ice ages. The comparatively warm and stable Holocene, indicated by A, began 11,000 years ago. Earth has moved out of that epoch as indicated by the dark circle, and is approaching conditions that prevailed in B, the warmest part of the Eemion inter-glacial period, over120,000 years ago. The Holocene is behind us, and there is little chance of turning back.



Figure 2. Possible pathways. A simplified representation of complex Earth System dynamics (PNAS).

If business-as-usual continues, the Earth will be irrevocably committed to conditions like those that prevailed millions of years ago in C, the mid-pliocene, or D the mid-miocene – "conditions that would be inhospitable to current human societies and to many other contemporary species".

Contrary to some media reports, the authors do not say that Hothouse Earth is an immediate prospect. Indeed, it will take centuries for the full impact of some large-scale Earth System processes to be fully felt. Their concern is that once Earth is committed to the hothouse trajectory, it will be irreversible, and the point of no return may be passed soon.

The authors write:

"Hothouse Earth is likely to be uncontrollable and dangerous to many, particularly if we transition into it in only a century or two, and it poses severe risks for health, economies, political stability (especially for the most climate vulnerable), and ultimately, the habitability of the planet for humans".

At a minimum, the path to hothouse conditions would involve flooding of coastal areas and "a substantial overall decrease in agricultural production, increased prices, and even more disparity between wealthy and poor countries". Heat also would make large parts of the planet uninhabitable.

However, the authors argue, there is still time to shift to an "Alternative Stabilized Earth Pathway", but only if radical changes are made in society's relationship with the rest of the Earth System.

"The Stabilized Earth Pathway could be conceptualized as a regime of the Earth System in which humanity plays an active planetary stewardship role in maintaining a state intermediate between the glacial-interglacial limit cycle of the late quarternary and a Hothouse Earth..." "We emphasize that Stabilized Earth is not an intrinsic state of the Earth System but rather, one in which humanity commits to a pathway of ongoing management of its relationship with the rest of the Earth".

They stress that getting to Stabilized Earth will involve, "a turbulent road of rapid and profound changes and uncertainties...that challenge the resilience of human societies", and that even then, it will not return to Holocene conditions: "Stabilized Earth will likely be warmer than any other time over the last 800,000 years at least (that is, warmer than at any other time in which fully modern humans have existed)".

We are, in short, at a fork in the road: "Social and technological trends and decisions occurring over the next decade or two could significantly influence the Earth System for tens to hundreds of thousand years".

Turning to the fourth question: What can be done to stabilize the Earth System, the authors challenge the environmental reformism of liberal green and most NGO's. They point out that: "The present dominant socio-economic system...is based on high carbon economic growth and exploitative resource use", and that attempts to reform it have been unsuccessful.

"Incremental linear changes to the present socioeconomic system are not enough to stabilize the Earth System. Widespread, rapid, and fundamental transformations will likely be required to reduce the risk of crossing the threshold and locking in the Hothouse Earth Pathway... "The contemporary way of guiding development founded on the tools, and beliefs of gradual or incremental change, with a focus on economic efficiency, will likely not be adequate to cope with this trajectory... "To avoid crossing a planetary threshold...a deep transformation based on a fundamental reorientation of human values, equity, behavior, institutions, economies, and technologies is required".

Although stated in very general terms, these points have deeply radical implications. These Earth System scientists have clearly concluded only system change can stop climate change.

The authors say that achieving a Stabilized Earth would require, "deep cuts in greenhouse gas emissions, protection and enhancement of biosphere carbon sinks, efforts to remove carbon dioxide from the atmosphere, possible solar radiation management, and adaptation to unavoidable impacts of the warming already occurring".

Professor Clive Hamilton of Charles Sturt University, Canberra and author of *Defiant Earth: The Fate of Humans in the Anthropocene*, 2018, makes a similar point:

"There are two questions humankind must face. (a) What must we do to prevent serial disasters becoming existential catastrophe? And (b) how can we make our socio-economic system flexible enough to cope with the new dispensation? The challenge is no longer how to use information to change people's minds. The challenge is how to change a culture".

(Guardian Australia: November 29,2018).

The outcome of the May 21 federal election, demonstrate there is a greater awareness within society that the climate crisis is in urgent need of action. However, this is just the issue of climate change we are talking about. Whilst the understanding of climate change has undoubtedly increased over the past two or three decades, many other issues, some connected with climate, still remain hidden from our purview: loss of forest cover, biodiversity loss and extinction, ocean acidification, stratospheric ozone depletion, loss of topsoil, freshwater withdrawals and chemical pollution are some of these issues of major concern.

In the introduction to his 2020 book *Less is More*, economic anthropologist Jason Hickel reminds us that what makes soils resilient and fertile is the fact that they normally teem with life: worms, grubs, insects, fungus and millions of microorganisms. However, over the past half-century industrial agriculture, with its reliance on aggressive ploughing and chemical inputs, has been killing ecosystems at a rapid pace. UN scientists have found that 40 percent of the planet's soils are now seriously degraded, while agricultural soil is being lost more than 100 times faster than it is being formed.

Crop yields are now declining on a fifth of the world's farmland, he continues, and scientists warn that the Earth will be able to support only another sixty years of harvests. The very soils that have formed the foundations of human civilization for tens of thousands of years are suddenly, in a matter of decades, on the verge of collapse, remarks Hickel.

A similar situation now exists in our oceans. Recent figures show that around 85 percent of global fish stocks are now depleted or facing collapse. Fish catches are beginning to decline around the world, for the first time in recorded history. In the Asia-Pacific, fishery yields are on track to hit zero by 2048. Most of this is due to aggressive overfishing says Jason Hickel. Just as with agriculture, corporations have turned fishing into an act of warfare, using industrial mega-trawlers to scrape the seafloor in their hunt for increasingly scarce fish, turning coral gardens and colourful ecosystems into lifeless plains in the process.

But this is only one issue in the ocean story.

Farming chemicals like nitrogen and phosphorous that flow into rivers, find their way to the oceans and seas creating algal blooms that result in dead zones (starved of oxygen) and subsequent fish kills.

Climate change also plays a part. Ninety percent of global warming is absorbed into the oceans, but they are suffering as a result, and vast areas of marine habitat are dying off. Simultaneously carbon emissions are causing oceans to become more acidic. Already marine animals are disappearing at twice the rate of terrestrial species and vast coral ecosystems are being bleached into dead colorless skeletons.

Accentuated by global warming but impacted primarily by humans on the habitats of animal and plant species, we are witnessing accelerating rates of biodiversity loss and species extinction. The rate of extinction is now 1,000 times faster than before the Industrial Revolution.

Now the situation is so severe says Hickel, the UN has set up a special taskforce to monitor it: The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). In 2019 it published its first comprehensive report that found that since 1970, the number of birds, mammals, reptiles and amphibians had collapsed by more than half and one million species are now at risk of extinction within decades. Anne Larigauderie, the IPBES executive secretary stated: "We are currently, in a systematic manner, exterminating all non-human living beings." A recent study published in the prestigious *Proceedings of the National Academy of Sciences* described the extinction crisis as "biological annihilation" and concluded that it represented a "frightening assault on the foundations of human civilization... for the decimation of the only assemblage of life that we know in the universe" (PNAS 30:2017).

It Is Impossible to adequately understand our ecological crisis with the same reductive thinking that caused it in the first place, claims Jason Hickel. And this is particularly clear when it comes to climate change. We tend to think about climate change as primarily a matter of temperature, but temperature is just the beginning he says.

Some consequences of temperature are obvious since we can see and experience them directly. The number of extreme storms that happen each year has doubled since the 1980s. In the America's think Hurricane Harvey (Texas), Irma (Barbuda), and Maria (Puerta Rico) in 2017 – category 5 hurricanes that should happen once in a generation but in 2017 rolled in one after the other. Rising temperatures have also triggered deadly heatwaves. The heatwave that struck Europe in 2003 killed a staggering 70, 000 people in just four days. France was hardest hit with temperatures over 40 degrees for more than a week. Wheat crops declined by 10 percent as drought ravaged the continent. Three years later it happened again breaking records across northern Europe. In 2015, heatwaves in India and Pakistan sustained temperatures over 45 degrees and killed more than 5,000 people. Events like these feel real and tangible says Hickel. They become media headlines, but the more dangerous aspects of climate change do not. So far we've only barely breached one degree over pre-industrial levels. Prior to the recent COP 26 conference in Glasgow, factoring in countries' pledges to cut emissions under the Paris Agreement, which are voluntary and non-binding – global temperatures would still rise by 3.3 degrees. Towards the end of the conference in late 2021, Selwyn Hart, the UN assistant-secretary-general for climate change told the conference that the world was still on a "catastrophic pathway" to 2.7 degrees.

Humans have never lived on such a planet, says Hickel. The deadly heatwave that hit Europe in 2003. That will be a normal summer, he says. Spain, Italy and Greece will turn to deserts, with climates more like the Sahara than the Mediterranean as we know it. The Middle East will be cast in permanent drought.

At the same time, rising seas will change our world beyond recognition. So far sea levels are up about 20 centimetres since 1900. Even this apparent small rise made flooding more frequent and storm surges more dangerous. When Hurricane Michael smashed into the US in 2018 it brought a 14-foot (4.6 metre) surge that turned parts of the Florida coastline into a hellscape of shattered houses and twisted metal. If we carry on with business as usual, all of this will get much worse. In fact, even if we meet the Paris goal of keeping temperature rise to no more than two degrees, sea levels are projected to go up another 30 to 90 centimetres by the end of this century. Given the damage that 20 centimetres has caused, it's difficult to imagine what things will be like when it's up to four times higher than it is now.

Bangladesh and other low-lying Asian coastlines would be particularly hard hit. And yet, as disastrous as all this could be, perhaps a greater concern with climate change is the commonplace issue of food. Half of Asia's population depends on water that flows from Himalayan glaciers and not only for drinking and other household needs, but also for agriculture. For thousands of years the run-off from these glaciers has been replenished each year by new ice. But now that ice is melting faster than it is being replaced. On current trends this situation will only get worse threatening the livelihoods of hundreds of millions of people. In southern Europe, Iraq, Syria and much of the Middle East, extreme droughts and desertification will render whole regions inhospitable to agriculture. Major growing regions in the US and China will also take a hit According to NASA, droughts in the American plains and in the southwest could turn those regions into dustbowls.

As a handy rule of thumb, scientists say for every degree we heat the planet, the yield of staple cereal crops will decline by 10 percent. On our present trajectory that means losses of up to 30 percent this century. Under normal circumstances, regional food shortages can be covered by surpluses elsewhere in the world. But according to the IPCC, warming of over two degrees is likely to cause "sustained food disruption globally". As one of the lead authors of the report put it: "The potential risk of multi-breadbasket failure is increasing". Add this to soil depletion, pollinator die-off and fishery collapse, and we're looking at spiraling food emergencies.

This will have serious implications for global political stability. Regions affected by food shortages will see mass displacement as people migrate in search of stable food supplies. In fact, says Hickel, it's already happening. Many of those fleeing places like Guatemala and Somalia are doing so because their farms are no longer viable. The international system is already straining, with 65 million people displaced from their homes by wars and droughts – more than at any time since the Second World War. And as migration pressure builds, politics are becoming more polarized.

Ecosystems are complex networks, says Jason Hickel. They can be remarkably resilient under stress, but when key nodes begin to fail, knock-on effects reverberate through the web of life. This is how mass extinction events unfolded in the past. It can be difficult to predict how this kind of thing plays out. Things like tipping points and feedback loops make everything much riskier than it might otherwise be. This is what makes climate breakdown so concerning. Take the polar ice caps, for example. Ice functions like a giant reflector, bouncing light from the sun back out into space. This is known as the albedo effect. But as ice sheets disappear and reveal the darker landscapes and oceans beneath, all that solar energy gets absorbed and radiated as heat into the atmosphere. This drives further warming, which causes more ice to melt even faster. In the 1980s, Arctic ice covered an average of about seven million square kilometres. In 2020 this was down to about four million.

Feedback loops affect forests too. As the planet heats up, forests become drier and more vulnerable to fire. When forests burn, they release carbon into the atmosphere, and we lose them as a sink for future emissions. This exacerbates glob warming, but it also has a direct impact on rainfall. Forests literally produce rain. The Amazon, for instance, exhales some 20 billion tons of water vapour into the atmosphere every day, like an enormous river flowing invisibly into the sky. Much of it ends up raining back down on the land, but it produces rain as far as Canada. Forests are critical to our planet's circulatory system. As forests die off, droughts become more common and forests in their turn become yet more vulnerable to fire. The speed at which is happening is frightening. On our current trajectory most rainforests will wither away into savannah before the end of this century.

Scientific facts and their consequences have been piling up for decades. They become more elaborate, and more concerning, with every passing year. And yet, says Jason Hickel, for some reason we have not been able to change course. The past half-century is littered with milestones of inaction. A scientific consensus on anthropogenic climate change first began to form in the mid 1970s. The first international climate summit was held in 1979. The NASA climate scientist James Hansen gave his landmark testimony to the US Congress in 1988, explaining how the combustion of fossil fuels was driving climate breakdown. The UN Framework Convention on Climate Change (UNFCCC) was adopted in 1992 to set non-binding limits on greenhouse gas emission reductions – The UN framework has been extended three times, with its Kyoto Protocol in 1997, the Copenhagen Accord in 2009 and the Paris Agreement in 2015. And yet global carbon emissions continue to rise year after year, while ecosystems unravel at a deadly pace.

Even though we have known for nearly half a century that human civilization itself is at stake says Hickel, there has been no progress in arresting ecological breakdown. "None". It is an extraordinary paradox.

What explains this inertia? He asks. Some will point to fossil fuel companies and the vice-like grip they have on our political systems. And certainly, there is some truth in this. It is in large part thanks to their efforts that the international climate treaties are not legally binding, for they have lobbied against such a move, and they have waged an extraordinarily successful disinformation campaign that for decades eroded public support for climate change. Yes, fossil fuel companies and politicians that they have bought bear significant responsibility for our predicament. But this alone doesn't explain our failure to act, says Hickel. There's something else – something deeper. Our addiction to fossil fuels, and the antics of the fossil fuel industry, is just a symptom of a prior problem. What's ultimately at stake is the economic system that has come to dominate the whole planet over the past few centuries: Capitalism. Whatever we might think about capitalism, it's important to have a clear-eyed view of what it is and how it works.

There is a tendency to describe capitalism with familiar, well-worn words like "markets" and "trade". But that isn't quite accurate. Markets and trade were around for thousands of years before capitalism, No they' re innocent on their

own. What makes capitalism different from most other economic systems in history is that it's organized around imperative of constant expansion or growth: ever increasing levels of industrial extraction, production and consumption, which we have come to measure in terms of Gross Domestic Product (GDP). Growth is the prime directive of capital. Not growth for any particular purpose, mind you, says Hickel, but growth for its own sake. And it has a kind of totalitarian logic to it. Every industry, every sector, every national economy must grow, all the time, with no identifiable end point.

It can be difficult to grasp the Implications of this, he continues. We tend to take the idea of growth for granted because it sounds so natural. And it is. All living organisms grow. But in nature there is a self-limiting logic to growth. Organisms grow to a point of maturity and then maintain a healthy equilibrium. When growth fails to stop – when cells keep replicating just for the sake of it – it's because of a coding error, like what happens with cancer. This kind of growth quickly becomes deadly.

Under capitalism, global GDP needs to keep growing by at least two to three percent per year, which is the minimum necessary for large firms to maintain aggregate profits. That might seem a small increment, but keep in mind that this is an exponential curve, and exponential curves have a way of sneaking up on us with astonishing speed. Three percent growth means doubling the size of the global economy every 23 years, and then again and again. This might be okay if GDP were just plucked out of the air, but it's not, says Hickel. It is coupled to energy and resource use and has been for the entire history of capitalism. As GDP grows, the global economy churns through more energy, resources and waste each year, to the point where it is now dramatically overshooting what scientists have defined as safe planetary boundaries, with devastating consequences for the living world.

But contrary to what the language of the Anthropocene implies, this ecological crisis is not being caused by all of us human beings equally. This is a crucial point to grasp says Hickel, as most countries in the Global South, remain well within their fair share of planetary boundaries. In fact, in many cases they need to increase their energy and resource use in order to meet human needs. It's high - income countries that are the problem here, whose growth has been completely unhinged from any concept of need and has been vastly in excess of what is required for human flourishing. Global ecological breakdown is being driven almost entirely by excess accumulation among the very rich, while the consequences hurt the Global South, and the poor disproportionately. Ultimately, this is a crisis of inequality as much as anything else.

Jason Hickel says, we know exactly what we need to do in order to avert climate breakdown. We need to actively scale down fossil fuels and mobilize a rapid

rollout of renewable energy – a global Green New Deal – to cut world emissions in half within a decade and get to zero before 2050.

Keep in mind that this is a global average target. High-income nations, given their greater responsibility for historical emissions, need to do it more quickly, reaching zero by 2030. It is impossible to overstate how dramatic this is: it is the single most challenging task that humanity has ever faced. The good news is that it is absolutely possible to achieve. But there's a problem: scientists are clear that it cannot be done quickly enough to keep temperatures under 1.5 degrees, if we keep growing the economy at the same time. Why? Because more growth means more energy demand, and more energy demand makes it much more difficult – impossible, in fact – to roll out enough renewables to cover it in the short time we have left.

Even if this wasn't a problem, we must ask ourselves, once we have 100 percent clean energy, what are we going to do with it? Unless we change how our economy works, we'll keep doing exactly what we are doing with fossil fuels: we'll use it to power continued extraction and production, at an ever increasing rate, placing ever increasing pressure on the living world because that's what capitalism requires. Clean energy might help deal with emissions, but it does nothing to reverse deforestation, overfishing, soil depletion and mass extinction. A growth-obsessed economy powered by clean energy will still tip us into ecological disaster.

The tricky part, says Hickel, is that it seems we have little choice about this. Capitalism is fundamentally *dependent* on growth. If the economy doesn't grow, it collapses into recession: debts pile up, people lose their jobs and homes, lives shatter. Governments must scramble to keep industrial activity growing in a perpetual bid to stave off crisis. So, we're trapped. Growth is a structural imperative – an iron law. And it has ironclad ideological support: politicians on the left and the right may bicker about how to distribute the yields of growth, but when it comes to the pursuit of growth itself, they are united. There is no daylight between them. Growthism, as we might call it, stands as one of the most hegemonic ideologies in modern history, claims Jason Hickel. Nobody stops to question it.

It is because of their commitment to growthism that our politicians find themselves unable to take meaningful action to stop ecological breakdown. We have dozens of ideas for how to fix the problem, but we dare not because doing so might undermine growth. And in a growth dependent economy, that cannot be allowed to happen. Instead, the very newspapers that carry harrowing stories about ecological breakdown also report excitedly on how GDP is growing every quarter, and the way the very politicians who wring their hands about climate breakdown also call dutifully for more industrial growth every year. The cognitive dissonance is striking.

Some people try to reconcile this tension by leaning on the hope that technology will save us – "innovation will make us "green". Efficiency improvements will enable us to "decouple" GDP from ecological impact so we can continue growing the global economy forever without having to change anything about capitalism. And if this doesn't work, we can always rely on geo-engineering schemes to rescue us in a pinch.

It's a comforting fantasy that Jason Hickel once believed himself, but after much research over a number of years realized it was a pipedream. It has no empirical support whatsoever and he states that in an era of ecological emergency, we cannot afford to build policy on fantasies.

But he advises, technology is absolutely essential in the fight against ecological breakdown. We need all the efficiency improvements that we can get. But scientists are clear they will not be enough, on their own, to fix the problem. Why? He asks. Because in a growth-oriented economy, efficient improvements are harnessed instead to advance the objectives of growth to pull ever-larger swathes of nature into circuits of extraction and production. It's not our technology that's the problem. It's growth, he says.

How odd it is, remarks Jason Hickel: we are a culture that is enamoured of newness, obsessed with invention and innovation. We claim to celebrate creative, out-of-the-box thinking, so why is it that, when it comes to our economic system, we have so readily swallowed the line capitalism is the only possible option and we shouldn't even think about creating something better? Why are we so wedded to the dusty dogma of this old sixteenth century model, to the point of dragging it doggedly into a future for which it is manifestly unfit? But perhaps something is changing, suggests Hickel. In 2007, an American college sophomore named Trevor Hill stood up during a televised town hall meeting in New York and posed a question to Nancy Pelosi, the speaker of the US House of Representatives at the time and one of the most powerful people in the world. He cited a study by Harvard University showing that 51 percent of US Americans between the ages of eighteen and twenty-nine no longer support capitalism, and asked whether the Democrats, Pelosi's party, could embrace this fast-changing reality and stake out a vision for an alternative economy. Pelosi was visibly taken aback: "I thank you for your question, she said, "but I'm sorry to say we're capitalists and that's just the way it is".

The footage went viral. It was powerful because it demonstrated the taboo against questioning capitalism, right out in the open. He's just your average

millennial – bright, informed curious about the world, and eager to imagine a better one. He had asked a sincere question, and yet Pelosi, stammering and defensive, was unable to entertain it, and unable even to articulate a meaningful justification for her position. Capitalism is so taken for granted that its proponents don't even know how to justify it.

The video captured people's imaginations because it revealed that younger people are ready to think differently; ready to question old certainties. And they are not alone. Whilst most people may not describe themselves as anti-capitalist, survey results nonetheless show that large majorities question core tenets of capitalist economics. A YouGov poll in 2015 found that 64 percent of people in Britain believe capitalism is unfair. Even in the US, it's as high as 55 percent and in Germany a solid 77 percent. In 2020, a survey by the Edelman Trust Barometer showed that most people around the world (56 percent) agreed with the statement: "Capitalism does more harm than good." In France it's as high as 69 percent. In India it's a staggering 74 percent. On top of this, fully threequarters of people across all major capitalist economies say they believe corporations are corrupt.

These sentiments become even stronger when the questions are framed in terms of growth. A poll by Yale University in 2018 found that no fewer than70 percent of Americans agree with the statement that: "Environmental protection is more important than growth".

In 2019, the European Council on Foreign Relations asked an even stronger version of this question to people in fourteen EU countries. They phrased it as: "Do you believe that environment should be made a priority even if doing so damages economic growth?" Yet, says Jason Hickel, in almost all cases, large majorities (between 55 and 70 percent) said yes. And we find similar results outside Western Europe and North America. A scientific review of surveys found that when people must choose between environmental protection and growth, "environmental protection is prioritized in most surveys and countries". In some surveys, it's clear that people are willing to go further still. A major consumer research study found that on average about 70 percent of people in middle- and high-income countries around the world believe that overconsumption is putting our planet and society at risk, that we should buy and own less, and that doing so would not compromise our happiness or wellbeing. These are striking results. However, these people might describe their political views, they are articulating principles that run directly counter to the core logic of capitalism. This is an extraordinary story that has been almost completely hidden from view. People around the world are yearning for something better.

Sometimes science conflicts with the dominant worldview of a civilization. When that happens, says Jason Hickel, we need to make a choice. Either we ignore science or change our worldview. When Charles Darwin first proved that all

species, including humans, were descended from common ancestors over deep time, he was laughed off the stage. The notion that humans evolved from nonhumans, instead of being created in the image of God; and the notion that the history of life on the planet stretched back further than the few thousand years the Bible seems to suggest – at the time these ideas were utterly unacceptable. Some tried to explain Darwin's evidence away by devising outlandish alternative theories, in an attempt to preserve the status quo. But the cat was out of the bag, and soon, Darwin's work became scientific consensus, and it forever changed the way we see the world.

Something similar is happening right now, says Hickel. As evidence about the relationship between GDP growth and ecological breakdown continues to mount, scientists around the world are shifting their approach. In 2018, 238 scientists called on the European Commission to abandon GDP growth and focus on human wellbeing and ecological stability instead. The following year more than 11, 000 scientists from over 150 countries published an article calling on the world's governments "to shift from pursuing GDP growth and affluence toward sustaining ecosystems and improving wellbeing." This would have been unthinkable in mainstream circles only a few years ago, but now there's a new consensus forming, remarks Jason Hickel.

Moving away from growth is not as wild as it might seem, says Hickel. For decades we've been told we need growth in order to improve people's lives. But it turns out this isn't actually true. Beyond a certain point, which high-income countries have long since surpassed, the relationship between GDP and wellbeing completely breaks down. As it's not *growth* that maters, it's how income and resources are distributed. And currently they are distributed very, very unequally. Consider this, says Hickel: the richest one percent (all of whom are millionaires) capture some \$19 trillion in income every year, which represents nearly a quarter of global GDP. This is astonishing when you think about it says Hickel. It means that a quarter of all the labour we render, all the resources we extract and all the carbon dioxide we emit is done to make rich people richer.

Once we realize that we don't *need* growth, we are free to think much more rationally about how to respond to the crisis we face. Scientists have made it clear that the only feasible way to reverse ecological breakdown and keep global warming under 1.5 degrees, or even two degrees, is for high-income countries to actively slow down the mad pace of extraction, production and waste. Reducing resource use removes pressure from ecosystems and gives the web of life time to knit itself back together, while reducing energy use makes it much easier for us to accomplish a rapid transition to renewables – in a matter of years, not decades – before dangerous tipping points begin to cascade.

This is called "degrowth", says Hickel – a planned reduction of excess energy and resource use to bring the economy back into balance with the living world in a safe, just and equitable way. The exciting part is that we know we can do this while at the same time ending poverty, improving human wellbeing, and ensuring flourishing lives for all. Indeed, this is the core principle of degrowth, he says.

What does this look like in practice, asks Hickel. The first part is to get past the irrational belief that all sectors of the economy must grow, all the time. Instead of mindlessly pursuing growth in every sector regardless of whether or not we need it, we can decide what kinds of things we want to grow (sectors like clean energy, public healthcare, essential services, regenerative agriculture) and what sectors need to radically degrow (things like fossil fuels, private jets, arms and SUV's). We can also scale down the parts of the economy that are designed purely to maximize profits, like planned obsolescence, where products are made to break down after a short time, or advertising strategies intended to manipulate our emotions and make us feel that what we have is inadequate.

As we liberate people from the toil of unnecessary labour, we can shorten the working week to maintain full employment, distribute income and wealth more fairly, and invest in public goods like universal healthcare, education and affordable housing. These measures have been proven consistently, to have a powerful positive impact on health and wellbeing, says Hickel. These are the keys to a flourishing society. The evidence is truly inspiring.

Let me emphasize that degrowth is not about reducing GDP. Of course, slowing down unnecessary extraction and production may mean that GDP grows more slowly, or stops growing, or even declines. And if so, that's okay. Under normal circumstances, this might trigger a recession. But a recession is what happens when a growth-dependent economy stops growing. It is chaotic and disastrous. What I am calling for here is something completely different. It is about shifting to a different economy altogether – an economy that doesn't need growth in the first place. To get there, we need to rethink everything from the debt system to the banking system, to liberate people, businesses, states and even innovation itself from the stuffy constraints of the growth imperative, freeing us to focus on higher goals. As we take practical steps in this direction, exciting new possibilities come into view. We can create an economy that is organized around human flourishing instead of around endless capital accumulation; in other words, a *post-capitalist economy:* An economy that's fairer, more just, and more caring.

These ideas have been percolating on different continents for the past few decades, like whispers of hope, says Hickel. Suddenly these ideas are rushing into the mainstream and inspiring an extraordinary shift in scientific discourse. Now we have the choice before us: will we change our worldview? This time the stakes are much higher than in Darwin's age. This time it's a matter of life and death.

Jason Hickel warns that to find the path ahead of us, we first need to understand how we got locked into the growth imperative to begin with. The processes of extraction that are so central to capitalist growth ultimately depend on a particular kind of ontology, or theory of being. Indeed, this is where our problem ultimately lies, he says. Those of us who live in capitalist societies today have been taught to believe there is a fundamental distinction between human society and the rest of the living world: humans are separate from and superior to "nature"; humans are subjects with spirit and mind and agency, whereas nature is an inert, mechanistic object. This way of seeing the world is known as dualism. We inherited these ideas from a long line of thinkers from Plato to Descartes, who primed us to believe that humans can rightfully exploit nature and subject it to our control. We didn't always believe these things. In fact, those who sought to pave the way for capitalism in the sixteenth century first had to destroy the other, more holistic ways of seeing the world, and either convince or force people to become dualists. Dualist philosophy was leveraged to cheapen life for the sake of growth; and it is responsible at a deep level for our ecological crisis, says Hickel.

But this is not the only way of being that's available to us, he says. My colleagues in anthropology have long pointed out that for most of human history people operated with a very different ontology a theory of being that we refer to, broadly as animist. For the most part people saw no fundamental divide between humans and the rest of the living world. Quite the opposite: they recognized a deep interdependence with rivers, forests, animals and plants, even with the planet itself, which they saw as sentient beings just like people. And animated by the very same spirit. In some cases, they even regarded them as kin. We see traces of this philosophy still flourishing today, from the Amazon Basin to the highlands of Bolivia to the forests of Malaysia, where people think about and interact with non-human beings – from Jaguars to rivers – not as 'nature' but as relatives. When you see the world this way, it fundamentally changes how you behave. If you start from the premise that all beings are the moral equivalent of persons, then you cannot simply take from them. To exploit nature as a "resource" for the sake of human enrichment is morally reprehensible – similar to slavery or even to cannibalism. Instead, you must enter into a relationship of reciprocity, in the spirit of the gift. You need to give as much as you receive.

This logic, which has inherent ecological value, runs directly against the core logic of capitalism, which is to take – and, more importantly, to take more than you give back. In fact, this is the basic mechanism of growth. Enlightenment thinkers once disparaged animist ideas as backwards and unscientific. They considered them to be a barrier to capitalist expansion and sought desperately to stamp them out. But today science is beginning to catch up.

Biologists are discovering that humans are not standalone individuals but composed largely of microorganisms on which we depend for functions as basic as digestion. Psychiatrists are learning that spending time around plants is essential to people's mental health, and indeed certain plants can heal humans from complex psychological traumas. Ecologists are learning that trees, far from being inanimate, communicate with each other and even share food and medicine through invisible mycelial networks in the soil. Quantum physicists are teaching us that individual particles that appear to be distinct are inextricably entangled with others, even across vast distances. And Earth-systems scientists are finding that the planet itself operates like a living super-organism.

All of this is changing how we think about our position in the web of life and paving the way for new theories of being. At the very same time our planet is plunged into ecological catastrophe, we are beginning to learn a different way of seeing ourselves in relation to the rest of the living world. We are beginning to remember secrets we long ago forgot says Hickel: secrets that linger in our hearts like whispers from the ancestors.

This completely upends the dusty old tropes of twentieth century environmentalism. Environmentalists sometimes tend to speak in terms of "limits", meagerness and personal puritanism. But this gets it exactly back to front, says Hickel. The notion of limits puts us on the wrong foot from the start. It presupposes that nature is something "out there", separate from us, like a stern authority hemming us in. This kind of thinking emerges from the very dualist ontology that got us into trouble in the first place. What I am calling for here is something altogether different. It is not about limits but interconnectedness – recovering a radical intimacy with other beings. It is not about puritanism but pleasure, conviviality and fun. And it is not about meagerness but bigness – expanding the boundaries of human community, expanding the boundaries of our language and expanding the boundaries of our consciousness.

It's not just our economics that needs to change, says Hickel. We need to change the way we see the world, and our place within it.

One of those who could see the need for changing the way we see the world, and our place in it is Tim Jackson, professor of Sustainable Development at the university of Surrey, UK and he was Economics Commissioner on the UK Sustainable Development Commission, where his work culminated in the first edition of his 2009 book, *Prosperity Without Growth*.

In the introduction to his book, Jackson claims, prosperity matters. To prosper, he says, is to do well and to be well. It means that things are going well for us and for those we care about. "How's life?" we ask our friends and acquaintances. "How are things?" Casual exchanges convey more than frivolous greetings. They reveal a mutual fascination for each other's wellbeing. Wanting things to go well is a common human concern.

It's certainly understood that this sense of things going well lies some notion of continuity. The future matters to us. We have a natural tendency to care about what will happen next.

There is a sense, too, in which individual prosperity is curtailed in the presence of social calamity. That things are going well for me personally is of little consolation if my family, my friends and my community are all in dire straits. My prosperity and the prosperity of those around me are intertwined. Sometimes inextricably.

Writ large, this shared concern translates itself into a vision of human progress. Prosperity speaks of the elimination of hunger and homelessness, an end to poverty and injustice, hopes for a secure and peaceful world. And this vision is important not just for altruistic reasons but often, too, as reassurance that our own lives are meaningful.

The possibility of social progress brings with it a comforting sense that things are getting better, says Jackson – if not always for us, then at least for those who come after us. A better society for our children, a fairer world and a place where those less fortunate will one day thrive. If I cannot believe this prospect possible, then what can I believe? What sense can I make of my own life? Prosperity in this sense is a shared vision claims Jackson. Echoes of it inhabit our daily rituals. Deliberations about it inform the political and social world. Hope for it lie at the heart of our lives.

But how is prosperity to be attained, he asks. Without some realistic way of translating hope into reality, it remains an illusion. The existence of a credible and robust mechanism for achieving progress matters. And this is more than just a question of the machinery of doing well. The legitimacy of the means to live well is part of the glue that keeps society together. Collective meaning is extinguished when hope is lost. Morality itself is threatened. Getting the mechanism right is vital.

It Is obvious we are failing in that task he states. Our technologies, our economy and our social aspirations are all badly aligned with any meaningful expression of prosperity. The vision of prosperity that drives us – based on the continued expansion of material wants – is fundamentally untenable. In pursuit of the good life today we are systematically eroding the basis of wellbeing tomorrow. In pursuit of our own wellbeing, we are undermining the possibilities for others. We stand in real danger of losing any prospect of a shared and lasting prosperity.

Professor Jackson states that his overriding aim is to seek viable responses to the biggest dilemma of our lives: reconciling our aspirations for the good life with the limitations and constraints of a finite planet; with a focus on finding a credible vision of what it means for human society to flourish in this context; and establishing the dimensions of a credible economics to deliver this aim.

He asks: what can prosperity possibly look like in a finite world, with limited resources and a population expected to exceed ten billion people within a few decades? Do we have a decent vision of prosperity for such a world? Is this vision credible in the face of the available evidence about ecological limits? And how do we go about turning vision into reality?

The prevailing response to these questions, he says, is to cast prosperity In economic terms and call for continually rising incomes as the means to deliver it. Higher incomes mean increased choices, richer lives, and improved quality of life for those who benefit from them. That at least is the conventional wisdom. This formula is cashed out (almost literally), says Jackson, as an increase in what economists call the Gross Domestic Product (GDP) per capita, that is, the average national income per person. The GDP is broadly speaking a measure of the overall "business" of the economy; or, in more precise terms, of the monetary value of the goods and services that are being produced and consumed within a given nation or region. Economic growth takes place when the GDP is rising – usually at a given rate of growth – across the economy.

There are good reasons to question whether such a crude measure as the GDP per capita is really sufficient to the task of reflecting prosperity. But for now, it's a fair reflection of common understanding. In broad terms, increasing prosperity is regarded as virtually synonymous with rising incomes, which are delivered, in the conventional wisdom, through continued economic growth.

This is of course one of the reasons why economic growth has been the single most important policy goal across the world for most of the last century. And the prescription clearly still has an appealing logic for the world's poorest nations. A meaningful approach to prosperity must certainly address the plight of more than three billion people across the world still living on less than \$5 a day.

But does the same logic really hold for the richer nations, where subsistence needs are largely met and the cornucopia of consumer goods adds little to material comfort and may even impede social wellbeing, asks Jackson. How is it with so much stuff already we still hunger for more? Would it not be better to halt the relentless pursuit of growth in the advanced economies and concentrate instead on sharing out the available resources more equitably?

In a world of finite resources, constrained by environmental limits, still characterized by "islands of prosperity within oceans of poverty", are everincreasing incomes for the already rich really a legitimate focus for our continued hopes and expectations? Or is there perhaps some other path towards a more sustainable and equitable form of prosperity?

Tim Jackson says it is worth making the point, as Kenneth Boulding's 1973 comment used as the epigraph in the first chapter: "Anyone who believes that exponential growth can go on forever in a finite world is either a madman or an economist", suggests, that to most economists the very idea of prosperity without growth is a complete anathema. Growth in the GDP is so much taken for granted that reams and reams have been written about what it's based on, who's best at making happen, and what to do when it stops happening.

Far less is written about why we might want it in the first place. But the relentless quest for more that lurks within the conventional view of prosperity is not without some claims to intellectual foundation.

In short, the argument goes something like this: The GDP counts the economic value of goods and services, exchanged on the market. If we're spending more and more money on more and more commodities, it's because we value them. We wouldn't value them if they weren't at the same time improving our lives and increasing our prosperity.

This conclusion is perverse precisely because prosperity isn't obviously synonymous with income or wealth, says Jackson. Rising prosperity isn't obviously the same thing as economic growth. More isn't always better. But it does at least provide some explanation for the tenacity with which we cling to the "little big number": GDP.

Perhaps strangely, prosperity has only recently been cast primarily in terms of money. Its original meaning was just about things going well: in accordance with (*pro-* in the Latin) our hopes and expectations (*speres*). Prosperity was simply

the opposite of adversity or affliction. The elision of rising prosperity with economic growth is a relatively modern construction. And it is a construction that has come under considerable criticism, says Jackson.

Among the charges against growth is that it has delivered its benefits, at least, unequally. The poorest half of the world's population earns less than seven percent of the total income. The top one percent, by contrast, earns about 20 percent of global income and own almost half of global wealth. Huge disparities – real differences in prosperity by anyone's standards – characterize the gap between rich and poor. Such disparities are dreadful from even the most basic humanitarian point of view. They also generate rising social tensions: real hardships in the most disadvantaged communities that have a spillover effect on society as a whole.

Extraordinarily, these disparities appear to be worsening. According to the UN Development Program, incomes today are more unequal than at any time since the middle of last century. In the space of less than half a century the richest one percent of the population have more than doubled their income share. Income inequality within developing countries increased by 11 percent in the last two decades. Even within the advanced economies, inequality is nine percent higher than it was 20 years ago.

While the rich got richer, middle-class incomes in western countries were stagnant in real terms long before the GFC. Indeed, some have argued that rising inequality was one of the causes of the crisis. Far from raising the standard for those who needed it, growth let most of the world's population down over the last 50 years. In the last few years in particular, wealth trickled up to the lucky few.

Fairness, or the lack of it, is only one of the reasons to question the conventional formula for achieving prosperity. Another is the recognition that, beyond a certain point at least, the continued pursuit of economic growth doesn't appear to advance and may even impede human happiness. Paradoxically though it may seem, this contention draws support from a long history of philosophical, religious, literary and artistic ideas. And it has experienced a surprising political revival in the last decade.

Even before the financial crisis, when the economy still appeared to be carrying us all towards a brighter and better future, there was disturbing evidence of a growing "social recession" in advanced economies. In Ecuador it was formalized in the concept of *Buen Vivir*, which was embedded in its national constitution. *Buen Vivir* has its roots in the indigenous concept of *Sumak kawsay*, which translates broadly as "good life" or "living well". It denotes "a system of knowledge and living on the communion of humans and nature."

Ecuador's 2008 constitution was also the first formally to enshrine the "rights of nature" into law. And this points us towards the third, and perhaps the most important challenge to the conventional equation of continual economic growth: the finite nature of the planet on which we live. Any credible vision of prosperity must hold a defensible position on the question of limits. This is particularly true of a vision based on growth. How –and for how long- is continued growth possible without coming up against ecological and resource constraints.

Simple logic suggests that industrial activity must at some point be bounded, says Jackson. Global economic output is now almost ten times bigger than it was in 1950. If that continues to expand at the same average rate – a prospect that economists and politicians almost universally hope for – the world economy in 2100 would be more than 20 time bigger than it is today: a staggering 200-fold increase in economic scale in the space of just a few generations. Common intuition suggests that this kind of expansion cannot continue indefinitely. For the most part, as in Boulding's satirical comment to the US Congress in 1973 (cited at the top of the chapter) suggests, economists reject this intuition. Some reject entirely any notion of limits. Their rejection is not entirely mad. But it is fundamentally flawed, claims Tim Jackson.

Concern for limits is as old as the hills, says Jackson. But like prosperity itself, meanings have changed over time. Ancient wisdom often saw limits not as obstacle, but as the foundation for prosperity. Limitations are equated directly with success, for instance, in the Chinese *Book of Changes*, the *I Ching*, whose origins go back almost 1,000 years BCE. By contrast, a life lived without limits was seen as foolhardy and destructive.

"Limitations are troublesome, but they are effective," wrote Richard Wilhelm in his 1923 translation of the *I Ching.* "If we live economically in normal times, we are prepared for times of want." Most often, the analogy is used to convey the role of limits in human affairs was taken from nature itself. "In nature there are fixed limits for summer and winter, day and night, and these limits give the year its meaning," argued Wilhelm.

Contemporary perspectives are far more likely to view limits as inconvenient or even illusory. The French archaeologist (and Jesuit priest) Teihard de Chardin once remarked that our duty as human beings is, "to proceed as if limits to our abilities did not exist...We are collaborators in creation," he said. This view of essentially limitless creativity has been reinforced further by the extraordinary advances in technology since de Chardin was writing. It has begun to seem that almost anything is possible, any resource constraint surmountable, any utopian vision for humanity achievable, comments Jackson. Former US President Ronald Reagan, appealing to the same zeitgeist, once proclaimed there were no great limits to growth because there were no limits on the human capacity for intelligence, imagination and wonder.

It's worth examining this assertion a bit more closely, precisely because it conveys a partial truth, says Jackson. Imagination, creativity and wonder may well be amongst these; and it certainly makes sense to recognize abundance wherever we may find it.

But there's also a fallacy in the claim, Jackson warns. The US author Wendell Berry once suggested that our "human and Earthly limits, properly understood, are not confinements, but rather inducements... to fullness of relationships and meaning." But that doesn't mean he insisted that we can pass simply from this abundance of meaning, without risking hubris.

Reagan's remarks, says Tim Jackson, were a direct response to the most influential work on limits to emerge from the twentieth century, the Club of Rome's *Limit' to Growth* published in 1972.

The *Limits to Growth* was commissioned by the Club of Rome, an international group of intellectuals and industrialists. The report was produced by MIT experts who were focused on system dynamics – taking the behavior of systems, rather than environmental issues – as the starting point. What they modeled was the interaction between exponential growth and a world with finite resources.

What the *Limits to Growth* argued is now obvious to most rational people, but nearly 50 years ago it completely challenged the dominant worldview. It modeled, in 12 possible futures, the consequences of ongoing growth in population and the economy in the context of limited resources, including the limited capacity of the Earth to "absorb pollution." In so doing, it spelled out our true relationship with the world around us.

The computer model World 3, at the heart of the report, recognized that human activity interacts with and affects the natural world. Not only are we completely dependent on this natural world for our survival and prosperity, but, in the language of *Limits to Growth*, we are capable of "inducing its collapse." The report concluded that such a physical collapse was inevitable if observed trends in humanity's growing ecological footprint continued, and with it would come a dramatic decline in our wealth. *Limits to Growth* argued that forward-looking policy could avoid humanity "overshooting" the Earth's limits, delays in political and economic decision making meant this would be challenging. Once the Earth was in overshoot, the only option would be to initiate a "managed decline" of our footprint or accept the coming collapse.

The *Limits to Growth* report quickly obtained notoriety because when it was released, attacks on the work were fast and furious and came from many quarters. Famously, Yale economist Henry C Wallich called it "irresponsible nonsense." Why such a strong response? The book was a fundamental challenge to those who believed the market was a self-correcting system that could continue to grow indefinitely. The ideas in it threatened the global assumption that the consumer capitalism model of the time would inevitably and indefinitely continue its march across the world.

The work was so effectively vilified that it has become accepted wisdom that the book got it wrong. In fact, it got it close to exactly right.

The most famous and effective attacks centred on one scenario from World3 where renewable resources are depleted without any societal or market response. This was a clearly unrealistic scenario, as explained in the book, but in modeling it is useful to create extreme scenarios for comparison purposes. World 3 in fact was used to generate a range of scenarios, many of which – including the "business-as-usual" scenario – saw collapse by the middle of the twenty-first century.

Despite the lack of rigour in the attacks, they soon became accepted, and for many, even today, the Limits *to Growth* simply got it wrong and is lumped in the same category as the earlier Malthusian forecasts of global famine. However, in fact, the *Limits to Growth* has proven to be surprisingly accurate, not just conceptually, but numerically as well. In 2008, a study was done into the modeling by the CSIRO's Graham Turner in a paper entitled: "A Comparison of the 'Limits to Growth' with Thirty years of reality."

It examined the past thirty years of actual results against a suite of scenarios in the *Limits to Growth report and found that changes in industrial production, food production and population up to 2,000 compare well with the report's business-as-usual scenario – called the "World3 standard run."* Interestingly, this scenario includes economic and societal collapse around the middle of the twenty-first century.

The prevailing economic model relies on a continual, exponential expansion of the size of the economy, says Jackson. Since the middle of the twentieth century, the global economy has expanded on average round 3.65 percent each year. By the end of the twenty-first century, if it were to continue to expand at the same rate, the global economy would be more than 200 times bigger than it was back in 1950.

A world in which things simply go on as usual Is already Inconceivable. But what about a world in which everyone could achieve a level of income expected in the affluent west? In a more equal and considerably richer world, global economic output would need to be 30 times bigger by the end of 2100 than it is today and more than 326 times bigger than it was in the middle of the last century.

What on Earth does such an economy look like, Tim Jackson asks. What does it run on? And does it offer a credible vision for a shared and lasting prosperity, he asks?

This extraordinary ramping up of global economic activity is without historical precedent. It's totally at odds with a finite resource base and the fragile ecology on which we depend for survival. And it's already been accompanied by the degradation of an estimated 60 percent of the world's ecosystems, he says. For the most part, we avoid the stark reality of these numbers. The default assumption is that – financial crises aside, growth will continue indefinitely. Not just for the poorest countries, where a better quality of life is undeniably needed, but even for the richest nations where the cornucopia of material wealth adds little to happiness and is beginning to threaten the foundations of our wellbeing.

The reasons for this collective blindness are, says Jackson, easy enough to find. The modern economy is structurally reliant on economic growth for its stability. When growth falters, as it did dramatically during the financial crisis, politicians panic. Businesses struggle to survive. People lose their jobs and sometimes their homes. A spiral of recession looms. Questioning growth is deemed to be the act of lunatics, idealists and revolutionaries.

But question it we must, says Jackson. The idea of a non-growing economy may be anathema to an economist. But the idea of a continually growing economy is anathema to an ecologist. No subsystem of a finite system can grow indefinitely – at least not in physical terms. Economists must be able to answer the question oof how a continually growing economic system can fit within a finite ecological system.

The only answer available Is that growth In dollars must be "decoupled" from growth in physical throughputs and environmental impacts. But this hasn't so far achieved what's needed. There are no prospects for it doing so in the immediate future. And the sheer scale of decoupling required to meet the limits set out here (and stay within them in perpetuity while the economy keeps on growing) staggers the imagination, Says Jackson.

In short, he says, we have no alternative but to question growth. The myth of growth has failed us. It has failed the three billion people who still live on a little

more than the price of a skinny latte each day. It has failed the fragile ecological system on which we depend for survival. It has failed, spectacularly in its own terms, to provide economic stability and secure people's livelihoods.

The uncomfortable reality Is that we find ourselves faced with the imminent end of the era of cheap oil, highly volatile commodity prices, the degradation of air, water and soil, conflicts over land use, resource use, forestry and fishing rights, and the momentous challenge of stabilizing the broken climate. And we face these tasks with an economy that is fundamentally broken, in desperate need of renewal.

In these circumstances, he says, a return to business as usual is not an option. Prosperity for the few founded on ecological destruction and persistent social injustice is no foundation for a civilized society. Economic stability is vital. Protecting people's jobs, and creating new ones is absolutely essential. But we also stand in urgent need of a new sense of shared prosperity. A deeper commitment to justice in a finite world, says Tim Jackson.

Delivering these goals may seem an unfamiliar or even incongruous task to policy in the modern age. The role of government has been framed so narrowly by material aims and hollowed out by a misguided vision of unbounded consumer freedoms. The concept of governance itself stands in urgent need of renewal.

But there remains a unique opportunity to invest in change, says Jackson. To sweep away the short-term thinking that has plagued society for decades, and to replace it with considered policy capable of addressing the enormous challenge of delivering a lasting prosperity.

For at the end of the day, he continues, prosperity goes beyond material pleasures, and it transcends material concerns. It resides in the quality of our lives and in the health and happiness of our families. It is present in the strength of our relationships and our trust in the community. It is evidenced by our satisfaction at work and our sense of shared meaning and purpose. It hangs on our potential to participate fully in the life of society.

Prosperity consists in our ability to flourish as human beings – within the limits of a finite planet. The challenge for our society is to create the conditions under which this is possible. It is the most urgent task of our times, he emphasizes.

However, before we get to that quest it is worth reflecting on some recent economic evidence that helps in our overall understanding and can surely increase our resolve in the development ahead for a new economic system without growth. Tim Jackson tells us that the conventional formula for achieving prosperity relies on the pursuit of economic growth. Higher Incomes will increase wellbeing and lead to prosperity for all, in this familiar view.

But this vision of progress as a paradise of continually rising consumption has come under serious scrutiny – not just from those who doubt its feasibility on a finite planet or question its desirability from a human perspective, but also from those wondering where on Earth economic growth is going to come from in the wake of the worst financial crisis in almost a century he says.

The fault lines In conventional economics have widened, says Jackson. What once seemed like tiny fissures, barely visible to the Western eye, have now become deep chasms threatening to engulf entire nations. The collapse of Lehman Brothers on 15 September 2008 signaled more than the onset of a cyclical liquidity crisis. The pallid light of recession has illuminated crack after crack in the shiny surface of capitalism. It is now apparent that those cracks run right to the heart of the model, he claims.

An economy whose stability rests on the relentless stimulation of consumer demand destroys not only the fragile resource base of this finite planet, but also the stability of its financial and political system. Consumer capitalism relies on debt to keep growth going. Burgeoning credit creates fragile balance sheets. Complex financial instruments are used to disguise unsavory risk. But when the debts eventually become toxic, the system crashes.

Governments committed trillions of dollars to securitize risky assets, underwrite threatened savings, recapitalize failing banks and re-stimulate the economy in the wake of the crisis. No one pretended this was anything other than a shortterm solution. Many even accepted that it was deeply regressive. It was a temporary fix that rewarded those responsible for the crisis at the expense of the taxpayer. But it was excused on the grounds that the alternative was simply unthinkable, says Jackson.

Facing these problems with an economic system still struggling to regain its footing is of course immensely challenging, particularly in the presence of a widely held view that there is no alternative. But it's clear that some serious reflection is in order, says Tim Jackson. Not to stand back and question what happened would be foolhardy. Not to engage in some serious recalibration of the economic model would be to compound failure with failure: failure of responsibility with failure of vision, says Jackson.

And, in principle at least, continuing economic uncertainties present us with a unique opportunity for change: The potential to address both financial and ecological sustainability. And there is the opportunity to confront the limitations of the past with a renewed vision for the future. At the very least, it is clear that the task of rebuilding an economy fit for the challenges of the twenty-first century has become more, not less essential in the years since the first edition of his book was published, Professor Jackson says.

Debt is not always unsavory, he says. There is clearly some logic to the claim that the rich economies are (even now) living in a "debt-fueled" consumerism... But debt is a social institution with a very long pedigree: Debt provided the most primitive means of exchange. Debt is the foundation for production in the capitalist economy, argues Tim Jackson.

So, Tim Jackson asks: Why is it that households, firms and governments more or less dismantled financial prudence in the decades leading up to the crisis? Some of the answer to this question, says Jackson, lies in a kind of natural exuberance that takes over when things appear to be going well. British economist John Maynard Keynes called this "animal spirit". Like Keynes before him, US economist Hyman Minsky proposed an absolutely vital role for the state in stabilizing an unstable economy. This role favoured prudential oversight and regulation to mitigate the worst excesses of the cycle. Minsky also advocated a form of "counter-cyclical" spending in which government became "employer of last resort" in the event associated with financial collapse, and also to provide a much-needed stimulus to get the economy going again.

In the decades preceding the crisis none of this was happening. Oversight was being removed. Regulation was being dismantled. And again, we must ask the question: why did this happen?

Tim Jackson claims: we still don't have an entirely adequate explanation why financial markets managed to destabilize entire economies.; why loans were offered to people who couldn't afford to pay them off; why regulators failed to curb individual financial practices that could bring down monolithic institutions; and why government consistently turned a blind eye or actively encouraged this "age of irresponsibility".

This question could be partly answered by saying that policy makers (and indeed many economists) were generally painfully ignorant of the work of Hyman Minsky and the small number of economists who might have shed some light on what was going on.
But even this answer doesn't quite cut it, says Jackson, because the reality is that, far from exercising or encouraging prudence, governments were deliberately acting in ways that increased fragility. The 1990s and early 2000s were characterized by increasing deregulation of financial markets and a massive innovation in the design of complex financial instruments, all driven (or at least justified) by an ideological assumption that a financial free market would be the best thing possible for the economy.

Tim Jackson reminds us that way back in 1933Franklin D. Roosevelt's government passed something called the Glass Steagal Act, a showpiece of US legislation which forced a separation between commercial and investment banking. Basically it stopped banks taking risks with their depositor's money. However, in 1999, less than a decade before the crisis, the Gram-Leach-Bliley Act overturned this separation.

For over three decades, the role of easy credit in stimulating growth had been promoted by the monetarism of Milton Friedman and the influential Chicago school of economics, says Jackson. Reacting against the unwieldy deficits incurred by Keynesian spending programs in the 1970s, the monetarists believed that monetary policy rather than fiscal policy was the key to economic stability. And in the hands of policy makers, heavily influenced by financial institutions, the deregulation of credit was deemed the best way to boost the economy.

The degree to which this progressive deregulation and the surge in private sector credit contributed to the crisis is now more or less incontrovertible, says Jackson. "The question arises, then, in the last fifteen years: can we identify any sustained stretch during which the economy grew satisfactorily with conditions that were financially sustainable?" asked the former US Treasury Secretary, Larry Summers. Hungarian-born financier George Soros linked the emergence of a "super bubble" in global financial markets to a series of economic policies designed to increase liquidity as a way of stimulating demand.

And here at last, says Tim Jackson, we come close to the heart of the mater. The market was not undone by isolated malpractice carried out by rogue individuals; or even through the turning of a blind eye by less than vigilant regulators. If there was irresponsibility, it was much more systematic, sanctioned from the top, and with one clear aim in mind: the continuation and protection of economic growth.

Allegiance to growth was the single most dominant feature of our economic and political system that led the world to the brink of economic disaster. The growth imperative has shaped the architecture of the modern economy, Says Jackson: It

motivated the freedoms granted to the financial sector. It drove the loosening of regulations, the proliferation of unmanageable (and unstable) financial derivatives, and the massive expansion in both public debt and private credit in the decades preceding and during the crisis.

The very policies put in place to stimulate economic growth, led inexorably towards its downfall: the market was undone by growth itself, claims Tim Jackson.

This understanding should have led to a profound re-examination of the growthbased economic paradigm, says Jackson, but very little of that actually happened. The mainstream response had more the character of an addict reaching for the bottle to cure a hangover from the night before: Anything to get growth back again, as fast as possible, no matter what the cost.

Extraordinary though some of the interventions were, they were largely regarded as temporary measures: necessary evils in the restoration of a freemarket economy. The declared aim was clear. By pumping equity into the banks and restoring confidence to lenders, the world's leaders hoped to restore liquidity, reinvigorate demand and "kick-start" the economy.

Their ultimate goal was to protect the pursuit of economic growth. Throughout everything, this has remained the one non-negotiable: that growth must continue at all costs. Renewed growth was the end that justified interventions unheard of only a few months previously. No politician seriously questioned this goal.

So bereft of conventional options, policy makers "quickly abandoned the mantra, *markets know better than governments*, blew the dust off their Keynesian textbooks and pumped money and hence demand into the global economy".

Some of this money was simply emergency funding to shore up ailing financial institutions.

But beyond this immediate need, a global consensus quickly emerged around a plan to engage in a full-scale Keynesian stimulus program akin to the ones put in place in the 1930s, says Jackson.

The hope Is that the stimulus will be effective. Credit will flow, consumers will spend, business will invest and innovate, productivity will return, and the wheels of the machine will start turning again. Governments will eventually reduce its debt through higher receipts. This is the logic of Keynesianism.

With interest rates at zero, and deficit spending outlawed, central banks were forced to turn towards more unconventional monetary policy. They committed even more money – this time in the form of "quantitative easing", to try and

increase nominal demand and re-stimulate investment. The sheer scale of these commitments was extraordinary. By 2012, the US alone had committed a staggering \$30 trillion – almost twice its annual GDP – to the recovery effort.

The first edition of *Prosperity Without Growth* was born in the middle of the worst financial crisis for eight decades, Tim Jackson tells us. Its early life was accompanied by a deepening recessionary gloom. Most people assumed this would soon be over. But as the cries of "growth at all costs "became louder and louder, the possibility of a "new normal" gradually began to dawn on economists.

What if, after all the fuss, there just wasn't so much growth to be had any more? What if the capacity of the economy to grow was slowing down? What if the reluctance of businesses to invest and consumers to spend was not just a cyclical downturn but a more entrenched change in economic fundamentals? The term "secular stagnation" re-emerged – it had first been used in 1939 – to reflect precisely these possibilities.

For the most part, says Jackson, fears of secular stagnation have been directed at the advanced economies. US economist, Robert Gordon has suggested that a slowdown in the US economy could come about as the result of a decline in the pace of innovation – many of the big technological advances of the last two centuries are now over – together with six "deflationary headwinds," which are taken to include: an ageing population, rising inequality and the "overhang" of consumer and government debt.

Irrespective of precise causes, it is indisputable that labour productivity growth in the advanced economies has been falling consistently for several decades and was doing so long before the financial crisis. Figure 2.2reveals the extent of this decline. Growth rates of four percent or more were typical of the 1950s and 1960s. A sharp decline in the 1970s was stabilized briefly during the 1980s and 1990s primarily through the productivity gains from the emerging digital economy but these were not to last. Trend productivity growth has fallen consistently since the turn of the millennium and in 2015 was less than 0.5 percent.



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Not everyone agrees that the problem lies with long-term supply growth, says Jackson. Some attribute it to a persistent slowing down of demand – the kind of thing that Japan has faced since the early 1990s. But most agree that the process has been going on for some time, masked (prior to the financial crisis) by the huge expansion of private debt and the creation of asset bubbles. In the aftermath of the crisis, as business, households and government all seek to reduce their indebtedness, the long-term weakness of both demand and supply are becoming visible.

Though it started out as a developed world problem, the risks of a global slowdown in growth are increasingly being seen as more widespread. In October 2015, the IMF revised its global growth projections downwards for the second time in the year, citing falling growth rates in the emerging and developing economies for the fifth year in succession.

A slowdown in China lies at the heart of this wider problem, says Jackson. Following the decision in 2014 to shift the basis of its economy from export-led growth to an expansion of domestic services, the Chinese economy has been on something of a rollercoaster ride. During 2015 the Chinese government was forced to slash its growth forecast and devalue its currency. Chinese shares plunged 30 percent in three weeks in the middle of the year and on 24 August 2015 over eight percent of share value was wiped out in a single day. The head of Swiss banking giant UBS, Axel Weber, added to the angst by warning that the world was now stuck in an era of low growth.

These comments illustrate the visceral fear that haunts the prospect of an economic slowdown. But the threat of secular stagnation has strange as well as familiar consequences, says Jackson.

One of these is that it brings the interests of conventional economists much closer to the concerns of those who have questioned growth on ecological or on social grounds. There now seems to be a distinct possibility that the economic growth on which we have relied, not only to improve the quality of our lives but also to maintain economic stability, might just not be available anymore.

Abandoning, or being abandoned by growth, is still a frightening prospect, says Jackson. But it places at a premium any strategy at all that might protect the quality of our lives and our hopes for a decent life. Seven years after it was first published, he adds, *Prosperity Without Growth* is no longer a radical narrative whispered by a radical fringe, but an essential vision for social progress in a post-crisis world.

The prevailing vision of prosperity as a continually expanding material paradise has come unraveled, says Jackson. Perhaps it worked better when economies were smaller and the world was less populated, or perhaps that early utopia was built from the savage imperialism of a few powerful nations. But if it was ever fit for purpose, it certainly isn't now.

Climate change, a catastrophic loss of biodiversity and the spectre of imminent resource scarcities compound the problems of failing financial markets and rising inequality. Short-term fixes to prop up a bankrupt system aren't good enough.

Something more is needed. An essential starting point is to set out a coherent notion of prosperity that doesn't rely on default assumptions about relentless material consumption growth.

Professor Jackson aims to identify a different kind of vision for prosperity; one in which it is possible for human beings to flourish, to achieve greater social cohesion, to find higher levels of wellbeing and yet still to reduce their material impact on the environment, to live well, and yet consume less, to have more fun – but with less stuff.

If this seems elusive, even delusional from a modern perspective, says Jackson, it's useful to remember that beyond the consumer paradise lie some strong competing visions of the good life. Some of these hail from psychology and sociology; others from economic history. Some draw on secular or philosophical viewpoints; others are from the religious or "wisdom" traditions.

Not surprisingly, there are differences between the various approaches. But there are striking similarities. Almost all perspectives, even religious ones, accept that prosperity has some material dimensions. It's perverse to talk about things going well when you lack the basic material resources required to sustain yourself: food and water to be adequately nourished or materials for clothing and shelter.

Security in achieving these aims is also important, says Jackson. Somehow, it's not quite enough to feel satisfied today, if you have no idea where the next square meal is coming from. It's hard to relax when you know the harvest is about to fail, or your bank account is empty, or your mortgage payments are overdue.

But, from about the time of Aristotle, it has been clear that something more than material security is needed for human beings to flourish. Prosperity has vital social and psychological dimensions. To do well is in part the ability to give and receive love, to enjoy the respect of your peers, to contribute useful work, and to have a sense of belonging and trust in the community.

In a groundbreaking study of poverty, published 40 years ago, the sociologist Peter Townend found that being poor was never about the absence of money. People suffer from poverty when they become "excluded from ordinary living patterns, customs and activities," he discovered.

"Even if we act to erase material poverty," said the late Robert Kennedy, shortly before his assassination in 1968, "there is another greater task. It is to confront the poverty of satisfaction – purpose and dignity – that afflicts us all." Prosperity, it turns out, is in part at least about our ability to participate actively in the life of our society, says Jackson.

Some perspectives – particularly from the wisdom traditions – add in an important moral or ethical component to prosperity. "Prosperity can only be conceived," wrote the Islamic writer Zia Sardar, "as a condition that includes obligation and responsibilities to others." My prosperity hangs on the prosperity of those around me, these traditions suggest, as theirs does on mine. In *The Art of Happiness*, the Dalai Lama takes this suggestion one step further. Those are happiest, he suggests, who show compassion for others and exercise care for them. Perhaps surprisingly, the claim has some support from modern scientific research. "The very act of concern for others' wellbeing creates a greater sense of wellbeing within oneself," concludes neuropsychologist Richard Davidson.

The recent surge of Interest In the science of happiness resonates deeply with the focus in Jackson's book. This doesn't mean that happiness is the same thing as prosperity, he says. But to the extent that we tend to be happy when things are going well and unhappy when they don't, there is clearly some connection between the two.

Using both cognitive and neuropsychology, this emerging science has done much to unravel the complex nature of human wellbeing. It confirms, for instance, that the material conditions of life matter. But they do not exhaust the foundations for happiness. Health, family, friendships and a fulfillment at work are often mentioned ahead of income or material wealth. Freedom and a sense of autonomy seem to matter. So does a sense of meaning and purpose. For some, this sense of meaning may entail belief in a higher power, says Jackson. It's fascinating to note that modern psychology has found a positive link between religious belief and subjective wellbeing. The link is particularly strong in poorer societies, where material conditions of life are less secure. But it seems to exist even in richer societies despite a paradoxical decline in religious participation. Even in a secular context, it's clear that the human psyche craves meaning and purpose, Jackson claims.

Success today is synonymous with material affluence. Worth is measured as wealth. Prosperity is cashed out as spending power. How much we have is more important than what kind of person we are. And who we are today is infinitely more important than how our lives might be seen in retrospect. Yet there is something immediately recognizable in the idea that ultimately, we can't take it all with us, says Jackson. The story of our lives, as seen in the round, will not be a record of all the stuff we momentarily enjoyed and ultimately threw away. Nor even of the wealth we managed to accumulate in offshore bank accounts. Neither will it simply be a sum of momentary pleasures. Rather, the good life is something in which we must invest (to use an economic term) both at the personal and at the societal level. The consumer society may have raised instant gratification to the status of a social good. But the wisdom has always recognized that deeper instincts drive the human psyche and occasionally draw out what might legitimately be called the best in us.

Fascinating though it is to philosophize on the roots of happiness, the task at hand is to establish a workable vision of prosperity at the societal level, says Jackson. "The good life of the good person," writes Zia Sardar, "can only be fully realized in the good society." The aim here is to articulate a credible account of prosperity in a wider world where the global population will approach 10 billion people by the middle of the century.

At least three different candidates emerge immediately from the discussions above and it's useful to distinguish carefully between them. Perhaps the easiest way to do this is to borrow from Amartya Sen, who set out the distinctions very clearly in a landmark essay on "The Living Standard" first published in 1984. One of Sen's concepts was characterized by the term *Opulence,* another by the term *utility,* and a third through the idea of *capability for flourishing.* It is the third one to which Jackson is heading.

Broadly speaking, Sen's first concept – opulence – corresponds to a conventional understanding that prosperity is about material satisfactions. Opulence means a great abundance or extravagance. It refers to the ready availability and steady throughput of material commodities. An increase in the volume flow of commodities represents an increase in prosperity. As such, the greater the throughput, the greater is our prosperity. In this view, the more we have, the better off we are.

The logic of abundance as the basis for doing well, dates to Adam Smith. In preindustrial society, it was quite simply a priority to ensure the provision of the material commodities needed for a decent life. It is still a priority in the poorest countries of the world. Food, water, shelter, sanitation, power: these necessities are inherently material in nature. And for those still living below the subsistence line, some increase in material throughput is unequivocally called for.

But it is straightforward to see that the simple equation of quantity with quality, of more with better, is false in general. Even economic theory recognizes this limitation. Economists call it "diminishing marginal utility" of goods – and of income itself. Each successive quantity of additional goods (or income) provides less and less in the way of additional satisfaction.

The sense that more can sometimes be less provides the beginnings of an understanding of the dissatisfactions of the consumer society. "Just underneath the beautiful surface of affluence," writes the Dalai Lama, "lays a kind of mental unrest, leading to frustration, unnecessary quarrels, reliance on drugs and alcohol, and in the worst case, suicide."

There is even a more important lesson emerging from all of this, says Jackson. The suspicion that the richest in the world are consuming more and more of the world's resources in pursuit of less and less additional satisfaction contains a powerful humanitarian argument for redistribution.

Should we not aim to optimize the overall satisfaction associated with our material throughputs rather than maximize the throughputs themselves, asks Jackson? And if this is the case, should we not focus our efforts on increasing incomes (and material throughputs) in the regions where this will have the biggest impact on people's quality of life" Interestingly, this idea is also at the core of Sen's second concept, prosperity as utility.

Quantity is not the same thing as quality, Opulence is not the same thing as satisfaction. Sen's second characterization recognizes this – Rather than focusing

on the sheer volume of commodities available to us, his second proposal relates prosperity to the uses and satisfactions which commodities provide.

Though it is easy enough to articulate this difference, it is more difficult to define exactly how commodities relate to satisfaction, as many people have noted. The one thing that's easy to figure out is that the relationship is highly non-linear. Even something as basic as food doesn't follow a simple linear path in which more is always better.

There is a particularly important complexity here. Increasingly, the uses to which we put material commodities are social or psychological in nature rather than purely material. In the immediate postwar years, it was a challenge to provide for basic necessities, even in the most affluent nations. Today, consumer goods and services increasingly furnish us with identity, experience, a sense of belonging, perhaps even meaning and sense of hope.

Measuring utility in these circumstances is even more difficult, says Jackson. What is the "psychic satisfaction" from an iphone? A new bicycle? A holiday abroad? A birthday present from a lover? These questions are practically impossible to answer. Economics get around the difficulty by assuming their value is equivalent to the price people are prepared to pay for them in freely functioning markets. It casts utility as the monetary value of market exchanges. As we have seen earlier, the GDP sums up all these market exchanges across the economy. Specifically, it measures the total spending by households, by government and the money invested by business. Theoretically, say economists, this sum of market exchanges is not a measure of the volume of stuff, but rather the utility associated with the throughput of stuff. And this, in a nutshell, is the case for believing that the GDP is a useful measure for wellbeing.

But the equation is deeply flawed. As Robert Kennedy remarked almost half a century ago, the GDP "counts air pollution and cigarette advertising and ambulances to clear our highways of carnage. It counts special locks for our doors and the gaols for the people who break them. It counts the destruction of the redwood and the loss of our natural wonder in chaotic sprawl."

And even as its busy toting up the supposed utility associated with so many dubious and downright destructive practices, there is much that the GDP misses out of its all-consuming account. "It measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country," Kennedy noted. "It measures everything in short, except that which makes life worthwhile."

The formal economics literature Is replete with critical examinations of the GDP, says Jackson. But it was to be another 40 years before a senior politician once

again dared to articulate its shortcomings. In February 2008, the President of France, Nicholas Sarkozy, set up a commission led by Nobel Laureate Joseph Stigllitz to explain the measurement of economic performance and social progress.

"What we measure affects what we do," reported the commission in 2009. "And if our measurements are flawed, decisions may be distorted...We often draw inferences about what are good policies by looking at what policies have promoted economic growth; but if our metrics of performance are flawed, so too may be the inference that we draw."

Just how far off we are by using GDP as a measure of social progress has been the subject of some heated discussion. Using a measure first put together in1989 by US economist Herman Daly and his colleague John Cobb, recent studies suggest (figure 3.1) that the conventional measure of GDP could be a gross overestimation of social progress, at least since about the beginning of the 1980s.

Bar a couple of short interruptions, per capita income rose continually between 1950 right up until the financial crisis. But the Genuine Progress Indicator (GPI) leveled off in the late 1970s and even began to decline slowly over the subsequent two decades. The average growth rate of GDP per capita was around 2.3 percent over the period. The average growth rate in the GPI was barely 0.5 percent per year.



Tim Jackson (2nd edition)

Such a radical departure from the GDP is a worrying indication that the exchange value is a poor proxy for the overall utility that goods and services provide us

with. When we start to subtract out the disutility – the damage caused by the production of these goods and services, for instance – then economic growth can even begin to look a bit like "uneconomic growth," as Daly describes it.

Amartya Sen finally introduces his third concept, the idea of *capabilities for flourishing.* The key questions we should be asking, he insists, are to do with how well people are able to function in any given context, says Jackson.

"Are they well nourished? Are they free from avoidable morbidity? Do they live long? He asks. Can they take part in the life of the community? Can they appear in public without shame and without feeling disgraced? Can they find worthwhile jobs? Can they visit friends and relations if they choose? In fact, says Jackson, the aspects of life that Sen cites in this extract – nutritional health, life expectancy, participation in society – coincide closely with the constituents of prosperity identified from time immemorial in a broad range of writings.

In his later work, Sen stresses not so much the functions themselves – whether people actually live long, have a worthwhile job or participate in the community – as the capability to do so, Says Jackson. His point is that, in a liberal society, people should have the right to choose whether to participate in society, to work in paid employment, or perhaps even whether to live a healthy life. It is the *capability* to flourish that constitutes progress.

But, says Jackson, there are other reasons not to take the focus on freedom too far. In a world in which there are any kind of limits, certain kinds of freedoms are either impossible or immoral. The freedom to kill indiscriminately is clearly one of them.

The freedom to achieve social recognition at the expense of child labour in the supply chain, or to find meaningful work at the expense of a collapse of biodiversity, or to participate in the life of the community at the expense of future generations, may well be others, he remarks. The freedom endlessly to accumulate material goods may simply be inaccessible to a world approaching 10 billion people.

This is the most important lesson that sustainability brings to any attempt to conceptualize prosperity. Capabilities for flourishing are a good starting point from which to define what it means to prosper. But this vision needs to be interpreted carefully: not as a set of disembodied freedoms, but as a range of "bounded capabilities" to live well – within certain inevitable limits, says Jackson.

Those limits are established in relation to two critical factors. The first is the finite nature of the ecological resources within which life on Earth is possible:

the regenerative capacity of our ecosystems, the available resources, the integrity of the atmosphere, the soils and the oceans.

None of these is infinite, Says Jackson. Each stands in a complex relationship to the web of life on Earth. We may not yet know exactly where all those limits lie. But we know enough to be absolutely sure that, in most cases, even the current level of economic activity is destroying ecological integrity and threatening ecosystem functioning, perhaps irreversibly. To ignore these natural bounds is to condemn our descendants – and our fellow creatures – to an impoverished planet.

The second limiting factor, says Tim Jackson, on our capability to live well is the scale of the global population. This is simple arithmetic. With a finite pie and any given level of technology, there is only so much in the way of resources and environmental space to go around. The bigger the population, the faster we hit the ecological buffers. The smaller the population, the lower the pressure on ecological resources. This basic tenet of systems ecology is the reality of life for every other species on the planet, and, for those in the poorest nations. The point is that a fair and lasting prosperity cannot be isolated from these material conditions. Capabilities are bounded, on the one hand, by the scale of the global population, and on the other, by the finite ecology of the planet.

In the presence of these ecological limits, flourishing itself becomes contingent on the entitlements of those who share the planet with us, and on the freedoms of future generations and other species. Prosperity in this sense has both intragenerational and inter-generational dimensions. As the wisdom tradition suggests, there is an irredeemably moral dimension to the good life. A prosperous society can only be conceived as one in which people everywhere have the capability to flourish in certain basic ways.

Deciding on these basic "entitlements" is not a trivial task, says Jackson. What does it mean for us to flourish? What are the functions that society should value and provide for? How much flourishing is sustainable in a finite world?

Sen has tended to stop short of clear prescriptions in this regard, even though some are implicit in his writing. The philosopher Martha Nassbaum has gone furthest in this direction. Her list of "central human capabilities" bears some striking resemblances to what we have already discussed says Tim Jackson. It includes the following:

- Life (being able to live to the end of a human life of normal length)
- bodily health

- bodily integrity (to be secure against violent assault; having opportunities for sexual satisfaction and choice in matters of reproduction)
- practical reason (being able to form a conception of the good life)
- affiliation (being able to live with and towards others)
- play; and
- control over one's environment.

Ultimately, any such list needs to be negotiated in open dialogue before it can be taken as the basis of policy. But in practice, there is a surprisingly strong overlap between the components in such a list and the constituents of prosperity identified across numerous domains and by innumerable philosophers, writers and sages.

Physical and mental health matter. Education and democratic entitlements count, Trust, security and a sense of community are vital to wellbeing. Relationships matter. Meaningful employment and the ability to participate in the life of society appear to be important almost everywhere. People suffer physically and mentally when these things are absent. Society itself is threatened when they decline.

The challenge is to create the conditions in which these basic entitlements are possible, says Jackson. This is likely to require a closer attention to the social, psychological and material conditions of living – for example, to people's psychological wellbeing and to the resilience of communities – than is familiar in free-market societies.

Crucially, though, he says, it doesn't mean settling for a vision of prosperity based on curtailment and sacrifice. Capabilities are inevitably bounded by material and social conditions. Some ways of functioning may be even foreclosed completely, particularly where they rely heavily on material throughput. But social and psychological wellbeing is not in any case best served by materialism. At the end of the day, this new vision of prosperity may serve us better than the narrow materialistic one that has ensnared us.

The possibility that humans can flourish, achieve greater social cohesion, find higher levels of wellbeing and still reduce their material impact on the environment is an intriguing one, he says. It would be foolish to think that it will be easy to achieve. But it should not be given up lightly. It may well offer the best prospect we have for a lasting prosperity. In her 2017 book *Doughnut Economics,* Oxford academic Kate Raworth sets out a roadmap for bringing humanity into a sweet spot that meets the needs of all within the means of the planet.

As mentioned earlier, in 2008 the French President, Nicholas Sarkozy, set up a commission led by Joseph Stiglitz and Amartya Sen to explain the measurement of economic performance through GDP and social progress that currently guides policymaking.

On surveying the state of indicators in use, the commission came to the blunt conclusion: "those attempting to guide the economy and our societies'," they wrote, "are like pilots trying to steer a course without a compass."

None of us want to be passengers on that directionless flight, says Kate Raworth. We urgently need a way to help policymakers, activists, business leaders and citizens alike to steer a wise course through the twenty-first century. So, she suggests a novel compass fit for the journey ahead.

First, to get our bearings, says Raworth, let's put GDP growth aside and start afresh with a fundamental question: What enables human being to thrive? A world in which every person can lead their life with dignity, opportunity and community – and where all do so within the means of our life-giving planet. In other words, we need to get into the doughnut. It's the visual concept I first drew in 2011 while working for Oxfam, and it's inspired by cutting-edge Earth – systems science. Over the past five years, I have renewed and updated it to reflect the latest in both global development goals and scientific understanding. So let me introduce you to the one doughnut that might be good for you, she says.

What exactly is the doughnut, Raworth asks? Put simply, it's a radically new compass for guiding humanity this century. And it points towards the future that can provide for every person's needs while safeguarding the living world on which we all depend. Below the Doughnut's social foundation lie shortfalls in human wellbeing, faced by those who lack life's essentials such as food, education and housing. Beyond the ecological ceiling lays an overshoot of pressure on Earth's life- giving systems, such as through climate change, ocean acidification and chemical pollution. But between these two sets of boundaries lies a sweet spot – shaped unmistakably like a doughnut – that is both an ecologically safe and socially just space for humanity. The twenty-first-century task is an unprecedented one, Raworth states: to bring all of humanity into that safer and just space.



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The Doughnut's inner ring, she explains – its social foundation – sets out the basis of life on which no one should be left falling short. These twelve basics include: sufficient food; clean water and decent sanitation; access to energy and clean cooking facilities; access to education and to healthcare; decent housing; a minimum income and decent work; and access to networks of information and to networks of social support.

Furthermore, it calls for achieving these with gender equality, social equity, political voice, and peace and justice. Since 1948 international human rights norms and laws have sought to establish every person's claim to most of those basics, no matter how much or how little money or power they have. Setting a target date to achieve all of them for every person alive might seem an extraordinary ambition, but it is now an official one. They are all included in the UN's Sustainable Development Goals – agreed by 193 member countries in 2015 – and most of these goals are to be achieved by 2030.

Since the mid-twentieth century, says Raworth, global economic development has helped many millions of people worldwide escape deprivation. They have become the first generations in their families to lead long, healthy and educated lives, with enough food to eat, clean water to drink, electricity in their homes, and money in their pockets – and for many, this transformation has been accompanied by gender equality between women and men, and greater political voice. But she continues, global economic development has also fueled a dramatic increase in humanity's use of Earth's resources, at first driven by the resource-intensive lifestyles of today's high-income countries, and more recently redoubled by the rapid growth of the global middle class. It's an economic era that has come to be known as the Great Acceleration, thanks to the extraordinary surge in human activity. Between 1950 and 2010, the global population almost trebled in size, and real-world GDP increased sevenfold. Worldwide, freshwater use more than trebled, energy use increased fourfold, and fertilizer use rose over tenfold.

The effects of this dramatic intensification of human activity are clearly visible in an array of indicators that monitor Earth's living systems, says Raworth. Since 1950 there has been an accompanying surge in ecological impacts, from the build-up of greenhouse gases in the atmosphere to ocean acidification and biodiversity loss. "It's difficult to overestimate the scale and speed of change," says Will Steffen, the scientist who led the study documenting these trends. "In a single lifetime humanity has become a planetary-scale geological force...This is a new phenomenon and indicates that humanity has a new responsibility at a global level for the planet..."

More extraordinary, says Raworth, scientists suggest that, if undisturbed, the Holocene's benevolent conditions would likely continue for another 50,000 years due to the unusually circular orbit of Earth is currently making of the sun – a phenomenon so rare that it last happened 400,000 years ago.



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This, Raworth emphasizes, is something to sit back and ponder. Here we are on the only known living planet, born into its most hospitable era which, thanks to the odd way we happen to be circling the sun right now, is set to run and run. We must be crazy, she says, to kick ourselves out of the Holocene's sweet spot, but that is exactly what we have been doing. Our growing pressure on the planet has turned us, humanity, into the biggest driver of planetary change. Thanks to the scale of our impact, we have left behind the Holocene and entered uncharted territory, known as the Anthropocene: the first geological epoch to have been shaped by human activity. What will it take now we are in the Anthropocene, asks Kate Raworth, to sustain the benevolent conditions that we knew in our Holocene home: its stable climate, ample freshwater, thriving biodiversity, and healthy oceans?

In 2009 an international group of Earth- System scientists, led by Johan Rockstrom and Will Steffen took this question and identified nine critical processes – such as the climate system and the freshwater cycle – that, together, regulate Earth's ability to maintain Holocene-like conditions. For each of these nine processes, they asked how much pressure it can take before the stability that has allowed humanity to thrive for thousands of years is put in jeopardy, tipping Earth into an unknown state in which novel and unexpected changes are likely to happen. The catch, of course, says Raworth, is that it is not possible to pinpoint exactly where danger lies and given that many of the shifts could be irreversible, we'd be wise not to find out the hard way. So, the scientists proposed a set of nine boundaries, like guardrails, where they believe each danger zone begins – equivalent to placing warning signs upstream of a river's treacherous but hidden waterfalls.

What do these warning signs say, Raworth asks? To avoid dangerous climate change, for example, keep the concentration of carbon dioxide in the atmosphere below 350 parts per million. In terms of limiting land conversion, ensure that 75 percent of once-forested land remains forested. And when it comes to using chemical fertilizers, add at most 62 million tons of nitrogen and 6 million tons of Phosphorus to Earth's soils each year. There are, of course, many uncertainties behind these top-level numbers, and the science is continually evolving. But in essence, the nine planetary boundaries create the best picture we have yet seen of what it will take to hang on to our home-sweet-home of the Holocene, but to do so in the human-dominated age of the Anthropocene. And it is these nine planetary boundaries that define the Doughnut's ecological ceiling: the limits beyond which we should put no further pressure on the planet if we want to safeguard the stability of our home.

Together, the social foundation of human rights and the ecological ceiling of planetary boundaries create the inner and outer boundaries of the Doughnut, says Raworth. And they are of course, deeply interconnected. If you are itching to pick up a pen and start drawing arrows on the Doughnut to explore how each of these boundaries might affect the others, you've got the idea – and the Doughnut will soon start to look like a bowl of spaghetti.

It may be tempting, for simplicity's sake, to seek to devise policies addressing each one of the planetary and social boundaries in turn, but that simply won't work, says Raworth: their interconnectedness demands that they each be understood as part of a complex socio-ecological system and hence be addressed within a greater whole.

Focusing on these many interconnections across the Doughnut, it becomes clear that human thriving depends upon planetary thriving. Growing sufficient, nutritious food for all requires healthy nutrient rich soils, ample fresh water, biodiverse crops, and a stable climate. Ensuring clean, safe water to drink depends upon the local-to-global hydrological cycle generating plentiful rainfall and continually recharging Earth's rivers and aquifers. Having clean air to breathe means halting emissions of toxic particulates that create lung-choking smog. We like to feel the warmth of the sun on our backs, but only if we are protected from its ultraviolet radiation by the ozone layer, and only if greenhouse gases in the atmosphere are not turning the sun's warmth into catastrophic global warming.



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If moving into the safe and just space that lies between the Doughnut's inner and outer boundaries is our twenty-first century challenge, the obvious question Raworth asks is this: How are we doing? Thanks to data advances in both human rights and Earth science, we have a clearer picture than ever before. Despite unprecedented progress in human wellbeing over the past 70 years, we are far beyond the Doughnuts boundaries on both sides.

Many millions of people still live below each of the social foundation's dimensions. Worldwide, one person in nine does not have enough to eat. One in four lives on less than \$3 a day, and one in eight young people cannot find work. One person in three still has no access to a toilet and one in eleven has no source of safe drinking water. One child in six aged between 12 and 15 is not in school, most of them girls. Almost 40 percent of people live in countries in which income is distributed unequally. And more than half of the world's population lives in counties in which people severely lack political voice. It is extraordinary that such deprivations in life's essentials continue to limit the potential of so many people's lives in the twenty-first century.

Humanity has at the same time, been putting Earth's life-giving systems under unprecedented stress, says Raworth. In fact, we have transgressed at least four planetary boundaries: those of climate change, land conversion, nitrogen and phosphorus loading, and biodiversity loss. The concentration of carbon dioxide in the atmosphere now far exceeds the boundary of 350 parts per million (PPM): it is over 400PPM and still rising, pushing us towards a hotter, drier, and more hostile climate, along with a rise in sea level that threatens the future of islands and coastal cities worldwide. Synthetic fertilizers containing nitrogen and phosphorus are being added to Earth's soils at twice their safe levels. The toxic run-off has already led to the collapse of aquatic life in many lakes, rivers and oceans, including a dead zone the size of Connecticut in the Gulf of Mexico.

Only 62 percent of land that could be forested still stands as forest and even that land area continues to shrink, significantly reducing Earth's capacity to act as a carbon sink. The scale of biodiversity loss is severe: species extinction is occurring at least ten times faster than the boundary deems safe. No wonder that, since 1970, the number of mammals, birds, reptiles, amphibians and fish has fallen by half. Although the global scale of chemical pollution has not yet been quantified, it is of great concern to many scientists. And human pressure on other critical Earth-system processes – such as freshwater withdrawals and ocean acidification – continue to increase towards planetary-scale danger zones, creating local and regional crises in the process.

This stark picture of humanity and our planetary home at the start of the twentyfirst century, says Raworth, is a powerful indictment of the path of global economic development that has been pursued to date. Billions of people still fall far short of their most basic needs, but we have already crossed into global ecological danger zones that profoundly risk undermining Earth's benevolent stability. Tim Jackson reminds us of the now famous quote written in 1955 by the US marketing consultant Victor Lebow: "Our enormously productive economy demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek our spiritual satisfactions, our ego satisfactions, in consumption". The reliance of the economic system itself on continued expansion means that we "need things consumed, burned up, worn out, replaced, and discarded at an ever-increasing pace" he concluded.

Here is a tantalising indication that the snug fit between nature and structure might not be so perfect after all, says Jackson. What looks like a system in which the needs of the human psyche are cleverly aligned with the demands of the economy now begins to look like a system in which precisely the opposite pertains. Economic success relies on persuading people back out onto the high street to spend. But this demand no longer resonates so easily with ordinary people. Politicians and policymakers and bankers and financiers and advertisers now find they must work much harder to encourage the kind of spending that will "put the economy back on track".

Opening a huge new shopping centre at the height of the financial crisis in October 2008, London Mayor Boris Johnson waved a credit card in front of the TV cameras, as though over-extended credit had nothing to do with the mess, we were already in. Londoners had made a "prudent decision to give Thursday morning a miss and come out shopping", he said of the huge crowds who attended the opening.

In the wake of the 9/11 attacks in 2001, George Bush famously appeared in front of the cameras with a similar exhortation: "Mrs Bush and I would like to encourage Americans everywhere to go out shopping." There are all sorts of things that could be said about this extraordinary statement, under extraordinary conditions. But as an exemplar of the persuasive extremes that politicians will go to keep people spending money it probably stands supreme, says Jackson.

The point, he continues, is not whether people listen to these exhortations. Or whether growth does or doesn't "recover". But rather that this degree of exhortation should be necessary at all, if the economy were so perfectly aligned with the needs of human beings. And once we concede that this might not be the case, then there may be moments and circumstances in which the demands of the economy and the needs of the people are in opposition to each other, its remarkable how much evidence of this disjuncture we begin to find. The task of the economy, claims Professor Jackson, is to deliver and to enable prosperity. But prosperity is not synonymous with material wealth and its requirements go beyond material sustenance, he adds. Rather, prosperity has to do with our ability to flourish, physically, psychologically and socially. Beyond sheer subsistence or survival, prosperity hangs on our ability to participate meaningfully in the life of society.

This task is as much social and psychological as it is material, Jackson says. And it gives rise to the intriguing possibility that human beings might flourish and thrive with considerably lower levels of material consumption; that we might even achieve better outcomes – greater social cohesion and higher personal fulfillment – with less stuff.

But the appealing idea that after our material needs are satisfied we could do away with material things altogether flounders on a simple and powerful fact: material goods provide a vital language through which we communicate with each other about the things that really matter: family, identity, friendship, community, purpose in life. Stuff and story turn out to be intimately entangled with each other.

There is clearly a paradox here, he says. If participation is what matters, and material goods provide a language to facilitate that, then richer societies ought to show more evidence of it. But the very opposite appears to be the case, and it has been for some time.

Writing over 40 years ago, the ecologist Murray Bookchin suggested that modern society had reached a "degree of anonymity, social atomization and spiritual alienation that is virtually unprecedented in human history". And at the turn of this millennium, the sociologist Robert Putnam documented the extent of this collapse of community in his provocative book *Bowling Alone.*

For years before the financial crisis, remarks Jackson, modern Western society was already in the grip of a social recession. Commentators from the political left point to rising rates of anxiety and clinical depression, increased alcoholism and binge drinking, and a decline in morale at work. Those from the right highlight the breakdown of community, a loss of trust across society and rising political apathy. And there is a remarkable agreement on this phenomenon.

Not surprisingly, says Jackson, trust in political institutions and in financial institutions, fell significantly in the wake of the financial crisis. But it's also acknowledged that some at least of the reasons for the breakdown in trust lie in the erosion of geographical community.

A study for the BBC in the UK confirms this trend. Using an index to measure geographical community in different BBC regions, the study revealed a remarkable change in British society over a 30-year period. But the BBC's "loneliness index" increased in every single region measured. In fact, according to one of the report's authors "even the weakest communities in 1971 were stronger than any community now".

The increasing number of people living in isolation has many different causes. The authors of the study link the changes largely to enhanced mobility. "Increased wealth and improved access to transport has made it easier for people to move for work, for retirement, for schools, for a new life", reports the BBC. They might also have mentioned, adds Jackson, that the mobility of labour is one of the requirements for higher productivity in the growth economy.

In other words, says Jackson, this kind of evidence provides for a sneaking suspicion that some degree of responsibility for the negative aspects of modern society is attributable to the pursuit of growth itself. As evidence of our ability to flourish, it doesn't look good. And it becomes even more puzzling why exactly rich countries continue to pursue material growth.

Amartya Sen came close to addressing this puzzle in his early work on the "living standard", says Jackson. Sen argued that the material requirements for physiological flourishing tend to be similar in all societies. After all, the basic human metabolism doesn't change so much across the species. Crucially, however, the material requirements associated with social and psychological capabilities can vary widely between different societies.

To lead a "life without shame", Sen claimed in "The Living Standard", to be able to visit and entertain one's friends, to keep track of what is going on and what others are talking about, and so on, requires a more expensive bundle of goods and services in a society that is generally richer and in which most people already have, say, means of transport, affluent clothing, radios or television sets, and so on". In short, he suggested, "the same absolute level of capabilities may thus have a greater relative need for incomes (and commodities)".

Putting aside for the moment the fact that higher incomes have, by the same token, been partly responsible for diminishing flourishing, there is an even more striking point to be noted here, says Jackson. If we take for granted the indispensability of material commodities for social functioning, we would have to accept that there is never any point at which we will be able to claim that enough is enough. This is the logic of Sen's argument. The baseline for proper social functioning is always the current level of commodities. And the avoidance of shame – a key motivation for human behavior – will drive material relentlessly forward in anything other than an entirely equal society, says Jackson.

The social trap is very clear, claims Jackson. At the individual level it makes perfect sense to avoid shame. It is like the language of goods just isn't doing its job properly. All that's left is an undignified scrap to try to ensure that we're somewhere near the top of the pile. Most worrying of all is that there is no escape from this social trap within the existing paradigm.

While social progress depends on the self-reinforcing cycle of novelty and anxiety, the problem can only get worse, suggests Jackson. Material throughput will inevitably grow. And the prospects for flourishing within ecological limits evaporate. Prosperity itself – in any meaningful sense of the word – is under threat. Not just from the financial crisis. Not even from the continuing economic fragilities. But from the relentless surge of materialism, and from the economic model that perpetuates it.

But this vision of society as a process of relentlessly chasing material advantage stands only, if it stands at all, in the face of a fierce resistance from a surprising range of sources, says Jackson. Even John Stewart Mill railed against it. "I am not charmed with the ideal of life held out by those who think that the normal state of human beings is that of struggling to get on", he wrote in 1848; "that the trampling, crushing, elbowing and treading on each other's heals, which form the existing type of social life, are the most desirable lot of humankind".

Mill proposed an alternative vision. "The best state for human nature", he declared, "is that which, while 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."

It would be easy to dismiss this as naïve utopianism, were it not for the fact that it came from one of the founders of classical economics, says Jackson. And that Mill made no claim that his more humanitarian vision was the most likely state of human nature. Only that it was the best. That it represented the best in human beings, rather than the worst.

It was the recognition, if any were needed, that human nature has within it the wherewithal to behave in more and in less civilized ways. And that the possibilities for organizing society in ways better than those witnessed in the mill towns of the mid-nineteenth century was something worth aspiring to.

The relentless role of the selfish competition and the excessive commoditization of everyday life have been a recurrent theme in critiques of capitalism, particularly over the last couple of decades, says Tim Jackson. The philosopher Kate Soper has pointed to a growing appetite for an "alternative hedonism" – sources of satisfaction that lie outside the conventional market. She describes a widespread disenchantment with modern life – a sense that consumer society has passed some critical point, where materialism is now actively detracting from human wellbeing.

Anxious to escape the work and spend cycle, we are suffering from a "fatigue with the clutter and waste of modern life" and yearn for certain forms of human interaction that have been eroded. We would welcome interventions to correct the balance, according to Soper. A shift towards an alternative hedonism would lead to a more ecologically sustainable life that is also more satisfying and would leave us happier.

Some remarkable statistical evidence tends to support this view, according to Jackson. Psychologist Tim Kasser has highlighted what he calls the high price of materialism. Materialistic values such as popularity, image and financial success are psychologically opposed to "intrinsic" values like self-acceptance, affiliation, a sense of belonging in the community. Yet these latter are the things that represent our deepest source of wellbeing. They are the constituents of prosperity. Kasser's findings are striking. People with higher intrinsic values are both happier and have higher levels of environmental responsibility than those with materialistic values.

A recent meta-study, led by social psychologist Helga Dittmar, supports this view. "Every day, thousands of advertisements tell us that people are happy, worthwhile, and successful to the extent that they have money, possessions and the right image", writes Dittmar. "Yet numerous philosophical and religious perspectives both across time and culture have suggested that focusing one's life on the acquisition of money, possessions, and status saps one's spirit and undermines one's quality of life.

The study set out to draw together the statistical evidence from 175 individual studies on the relationship between materialism and wellbeing from across the world. Dittmar and her colleagues found "a clear, consistent negative association between a broad array of types of personal wellbeing and people's belief in, and prioritization of, materialist pursuits in life".

This finding is extraordinary not just because it highlights the dangers of an increasingly materialistic society, says Jackson, but also because it suggests there really is a kind of double or triple dividend in a less materialistic life: people are

both happier and live more sustainably when they favour intrinsic goals that embed them in family and community. Flourishing within limits is a real possibility according to this evidence.

However, simple exhortations for people to resist consumerism are destined to failure, says Jackson. Particularly when the messages flowing from government are so painfully inconsistent. People readily identify this inconsistency and perceive it as hypocrisy, or something worse. Under current conditions it's tantamount to asking people to give up key capabilities and freedoms as social beings. Far from being irrational to resist these demands, it would be irrational not to, in our society.

In the normal course of events, suggests Jackson, social conditions determine the rules by which ordinary people seek to live. Culture shapes and constrains our lives. When things are working well, social structures are properly aligned with collective values and provide a cultural framework within which people can flourish, allowing us to live meaningful and purposive lives. When things go badly, institutional structures wage war on human values, undermining prosperity and damaging society.

This, argues Tim Jackson, is precisely where we find ourselves. It explains the restless dissatisfaction of consumerism. It makes sense of the paradoxes of thrift and materialism. It motivates the rise of a value-led anti-consumerism. And it draws support from a long succession of insights into the human condition from religion, from philosophers, from wisdom traditions, from poetry, from literature and from art: we are not and never were entirely the selfish hedonists that conventional economics expects and needs us to be. A simple and yet ferociously destructive misconception of human nature lies at the heart of modern capitalism.

The idea that human beings are primarily selfish and ultimately insatiable has a long and convoluted history, says Jackson. Some of its roots are to be found in the Christian doctrine of original sin. But it has achieved a particularly powerful incantation in the model of human nature that informs and sustains modern economics. Not only are people inherently selfish, according to this economic conception, but it is precisely this self-interest which leads society towards the greater good.

Professor Jackson reminds us of the Scottish moral philosopher Adam Smith, the man widely regarded as the father of economics and his dictum: "It is not from the benevolence of the butcher, the brewer and the baker that we expect our dinner, but from the regard to their own self-interest", Smith famously wrote in *An Inquiry into the Nature and Causes of the Wealth of Nations.* Everyone is

continually exerting himself in his own self-interest, said Smith. It is his own advantage, indeed and not that of society, which he has in view", but "he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention".

The metaphor of the invisible hand turned out to be an extraordinarily powerful one and it has been central to modern economics. Even though Smith himself wrote passionately about the dangers of corporate interests and the indispensable role for government in curbing these, this one single metaphor has motivated a ferocious defence of the virtues of an unbridled "free market" in which self-interest is given full rein.

It still isn't easy to see why exactly economics conflated self-interest with human nature entirely, says Jackson. Partly perhaps because this elision conferred simplicity on the mathematical models that economics was busy developing to explore the dynamics of the market. And partly because, over more or less the same period, the supposed centrality of self-interest to the human psyche was gaining support from one of the most powerful intellectual developments of the nineteenth century, the theory of evolution.

In its simplest terms, Darwin's theory of natural selection has two key components: the idea of spontaneous variation in the characteristics of plants and animals, and the process through which these variations are selected. This selection process was, broadly speaking, one of competitive struggle, in which the fittest survive and the weaker ones perish.

The fierce intellectual battles that raged between the followers of Darwin and the nineteenth century church were as much about the implications of the theory in terms of the character of human beings as they were about the story of creation, says Jackson. Natural selection appeared to give selfishness an unassailable importance in the evolution of the human species. If selection takes place at the level of the individual, it should, in the long run, favour the evolution of individuals who exhibit only selfish (i.e., self-preserving) behavior. Selfishness attained not just a legendary, but an evolutionary status.

It is interesting to note the parallels between early economics and nineteenthcentury evolutionary thought, says Jackson. Just as the self-interest of economic agents is supposed to lead "as if by an invisible hand" to the most favourable outcome for society, so the self-interest of individuals is supposed to lead through "the survival of the fittest" to the most favourable outcome for species. Economics has continued to "borrow" credibility for the centrality of self-interest from the theory of evolution ever since. But this credibility is critically, perhaps fatally, flawed.

Evolutionary explanations of behavior are by no means confined to the idea that human beings are inherently selfish, says Jackson. The existence of genuinely altruistic behavior is a fact of biology. Evolution doesn't preclude moral, social and altruistic behaviors. On the contrary, social behaviours evolved in humans precisely because they offer selective advantages to the species.

This simple insight leads to a much more nuanced view of what it means to be human, suggests Jackson. Selfishness clearly exists. But so, undeniably does altruism. Both kinds of behaviour are genetically possible in us. Both had evolutionary advantages to our species over long periods of time. Selfishness served us well under conditions of fight or flight. But altruism was fundamental to our evolution as social beings.

All of us are to a greater or lesser extent torn between the two, says Jackson. Neither have absolute reign over the other. Evolutionary psychology describes a tension in the human psyche between self-regarding and other-regarding values.

Equally interesting, from the perspective of understanding consumerism, it also recognizes another tension: between novelty-seeking values and conservative or traditional values. The first is adaptive in fast-changing conditions. But the second is absolutely vital in providing stability needed to raise families and form cohesive social groups.

The psychologist Shalom Schwartz and his colleagues have formalized these insights into a theory of underlying human values. Using a scale that has now been tested in over 50 countries, Schwartz suggests that our values are structured around these two distinct tensions in our psychological make-up: between selfishment (self-enhancement, in Schwartz's scheme) and altruism (self-transcendence) on the one hand, and between novelty (or openness to change) and tradition (or conservation) on the other.



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An evolutionary explanation for these tensions makes absolute sense, says Jackson. As society evolved in groups, people were caught between the needs of the individual and the needs of the group. And as they struggled for survival in sometimes hostile environments, people were caught between the need to adapt and to innovate and the need for stability. In other words, both individualism and the pursuit of novelty have played an adaptive role in our common survival. But so have altruism and conservation or tradition.

As a result, says Jackson, we certainly have it in us, at one extreme, to behave as voracious novelty seekers. But at the other end of the spectrum, we are absolutely prepared to hunker down and conserve our resources. Sometimes we can be persuaded to borrow to the hilt in pursuit of the latest fad or fashion. At other times, it's hard to stop us stuffing spare cash under the mattress as fast as we can, just to keep it safe for a rainier day.

This evolutionary map of the human heart reveals the crux of the matter. What we've created in consumer capitalism is an economy which privileges, and systematically encourages one specific segment of the human soul – the upper right quadrant in Figure 7.2. We've done this, in part, because the economy that we've created is best served by selfish, novelty-seeking behavior. Without the self-serving hedonist lurking within us, the economy itself is in danger of collapsing.

This combination of intellectual conceit and structural weakness has created a self-fulfilling prophesy, says Jackson. As the game theorist Robert Axelrod once demonstrated, the balance of behaviours in a society depends on how that society is structured. When technologies, infrastructures, institutions and social norms all reward self-enhancement and novelty, then selfish sensation-seeking behaviours prevail over more conservative ones.

But where social structures favour altruism, self-transcending behaviors are rewarded, and selfish ones penalized. When long-term vision is integrated into our institutions, then novelty seeking has a chance at least of being tempered by more cautionary behaviours.

Each society strikes this balance between altruism and selfishness (and between novelty and tradition) in different places. And where this balance is struck depends crucially on social structure. Social structure can change and be changed. They are amenable to policy. And all the evidence suggests that the time is ripe for such changes, because the existing structures are poorly aligned with human interests and values.

In summary, says Tim Jackson, we are faced with an unavoidable challenge. A limited form of flourishing through material success has kept our economies going for half a century or more. But it is completely unsustainable and now threatens to undermine the conditions for a shared prosperity. This materialistic vision of prosperity must be dismantled.

The idea of an economy whose task is to provide capabilities for flourishing within ecological limits offers the most credible vision to put in its place. But this can only happen through changes that support social behaviour and reduce the structural incentives to unproductive status competition.

The rewards from these changes are likely to be significant. A less materialistic society will be a happier one. A more equal society will be a less anxious one. Greater attention to community and to participation in the life of society will reduce the loneliness and anomie that has undermined wellbeing in the consumer economy.

What exactly does all this mean for economics, asks Professor Jackson? What would economics look like if we stretched its vision of human nature along these two axes of the human psyche? How might the economy be transformed if it were governed by institutions that protect and nurture what matters most in us? Above all, says Jackson, it's vital to understand that this vision of a different society, a different economics, is categorically not some kind of heroic demand to "change human nature". Rather it's about allowing the freedom to become fully human. It's about building an economics to reflect that vision. We are living in a material world, says Tim Jackson. We must eat and drink to survive; find shelter and clothing to protect ourselves; build schools for our children and hospitals for those who are sick. One of the most essential aims of the economy is provide for these material needs. But, he suggests, our lives are never entirely material. Our social world is as important as, sometimes more important than, than the material world. Identity, love, joy and meaning. These are all a vital part of what it means to be human. These immaterial goods are not in themselves producible, tradable commodities. But each one of them carries a material footprint. We express our love through gifts. We define our identities through possessions. We shop to allay our anxieties. Material goods are a language through which we communicate. Desire, affiliation, longing, affection, importance: these are some of the conversations that we need to have because of the intimate, ethereal relationship to material stuff.

There is nothing inherently pathological here, says Jackson. Materialism is not synonymous with greed. Saints have appetites too. The language of goods whispers unequivocally in everyone's ear. We need not even be fully cognizant of these subterranean vocabularies. They are almost instinctive in their expression, virtually subconscious in their manifestation, and present in every single society for which we have anthropological evidence.

But, says Jackson, there are pathologies in consumer society. One of these is the hyper-materialism of our social world. Consumerism entails handing over vast swathes of social life in material expression: a process driven, as we've seen, as much by the structural needs of the economy as it is by our own desires and needs, accelerated massively by advertising, marketing and the demand for economic expansion.

The tragedy of consumerism is not just that it is damaging the planet, says Jackson. But that it is doing so in pursuit of false gods and elusive dreams. On the other hand, this tragedy presents an opportunity: to build a better vision of progress with a more robust view of human nature at its core. This is our chance to create an economics fit for purpose – an economy capable of delivering a lasting prosperity.

The task is not straightforward, he says. But it is definable. It is specifiable. It offers surprisingly clear conceptual foundations for it. And we can begin to build on those foundations through concrete empirical examples and identifiable tasks: a systematic re-construction of economics that offers both meaning and hope to the idea of social progress. The aim here is to frame that process.

I want to focus on four distinct foundations for the economy of tomorrow, says Professor Jackson: the nature of enterprise, the quality of work, the structure of investment and the role of money. Taken together, I shall argue, these four elements hold the potential for a radical transformation of the economy with the potential to deliver a lasting prosperity.

Enterprise as service

Starting from first principles, Jackson says it is surprisingly easy to characterize the nature of economic activities from which the economy needs to be built. There are several key characteristics.

In the first place, the goal of the enterprise must be to provide the capabilities for people to flourish. Second, this must happen without destroying the ecological assets on which our future prosperity depends. So, enterprise needs to be low in carbon, efficient in resource use and non-extractive in nature. In short, economic activities must "tread lightly" on the Earth. Finally, enterprise should also afford decent, satisfying livelihoods for people. Employment matters in any economy. Work is not just the means to a livelihood but a key avenue for participation in society.

Former Oxfam researcher Kate Raworth has usefully visualized these criteria by combining the concept of planetary boundaries with the concept of social boundaries: a set of minimum standards for decent living, including food, water, health, energy, education and jobs. Raworth pointed out that, even as some planetary boundaries are already exceeded, some social conditions are still not achieved for vast numbers of the world's population.

"Between a social foundation that protects against critical human deprivations, and an environmental ceiling that avoids critical natural thresholds, lies a safe and just space for humanity – shaped like a doughnut", she wrote. "This is the space where both human wellbeing and planetary wellbeing are assured, and their interdependence is respected". There is a remarkable resonance between the social conditions laid out in the Oxfam paper and the capabilities identified in this book.

The critical question addressed here concerns the nature of the economic activities that will deliver these capabilities. What kinds of enterprise could offer us meaningful work as "producers" and valuable goods as "consumers" without destroying the quality of our environment and undermining our future prosperity? It might seem like a tall order. But there is one simple idea that has a surprising potential to help us here: the concept of service.

If prosperity is as much about social and psychological functioning – identity, affiliation, participation, creativity – as it is about material stuff, then it is mistaken to think of economic activity in terms of the throughput of material stuff. Rather we should construe the goal of the enterprise as delivering the "human services" that improve the quality of our lives: nutrition, health, social

care, education, leisure, recreation and the maintenance and protection of physical and natural assets.

These services almost always depend on materials to some degree, says Jackson. Sometimes, indeed, materiality is an inherent part of the service provided. Food, clothing, shelter are undeniably material commodities. But, even in these cases, it's possible to redefine economic activity in terms of service.

Food is fundamentally material, admits Jackson. But the service of nutrition is no simple function of the material quantity of food. In fact, it's a non-linear function of food intake. Less (food) can sometimes be more or better (nutrition). Some foods could even be called disservices (at least in the quantities we tend to consume them). Some "goods", paradoxically, may turn out to be "bads". To focus on service rather than on product is to recognize these subtleties.

Another good example is the concept of "energy services", says Jackson. No one wants oil or coal or gas in and of themselves. When people purchase fuel, it is with the explicit intention of achieving certain energy services from them: warmth, light, mobility, for instance. This might seem like an arbitrary redefinition, but it has some profound ramifications.

The same level of warmth (or thermal comfort), for instance, can be achieved in different ways, he says. In a well-insulated house, you can have comparable warmth with much lower consumption of oil or gas. And the critical point here is that less consumption of oil or gas means fewer greenhouse gas emissions. Thinking in terms of services, says Jackson reveals new ways to decarbonize or dematerialize human activities. When the value proposition of enterprise revolves around the delivery of dematerialized services rather than the manufacture of material products, there is a huge potential to rethink the relationship between economic output and material throughput. "Servicization", this strategy has sometimes been called.

It's vital to note, adds Jackson, that this is not simply another framing of the transformation to "service-based economies" that has characterized development in the rich world over recent decades. For the most part that's been achieved, as we've seen, by reducing heavy manufacturing, continuing to import consumption goods from abroad and expanding financial services to pay for them.

In fact, we have to be a little careful about any of the sectors for which, in principle, we see some potential for "servicization". Leisure and recreation, for example, is one of the fastest-growing sectors in modern economics and ought in principle to be a prime candidate for dematerialisation. In practice, the way we

spend our leisure time can be responsible for as much as 25 percent of our carbon footprint.

Yet there is clearly some mileage in the idea. Focusing on service rather than material throughput offers the potential for a fundamental transformation of enterprise. It is ultimately services rather than stuff that matters to us, whether this is in nutrition or housing or transport or health care, or education, or leisure. Almost all our needs can be cast in terms of services.

Perhaps surprisingly, says Jackson, the seeds for such a transformation already exist, often as local, community-based initiatives or in social enterprise: community energy projects, local farmers markets, slow food cooperatives, sports clubs, libraries, community health and fitness centres, local repair and maintenance services, craft workshops, writing centres, outdoor pursuits, music and drama, yoga, martial arts, meditation, gardening, the restoration of parks and open spaces.

In formal terms, many of these activities tend not to feature too highly on the conventional radar. They represent a kind of "Cinderella economy" sitting neglected on the margins of consumer society. Some of them scarcely register as mainstream economic activities at all.

So, it's odd, says Jackson, to find suggestions that services could provide the basis for a "new" engine of growth. Pointing out that ever greater consumption of resources is (in itself) a "driver of growth" in the current paradigm, US ecological economist Robert Ayres argues, "in effect, a new growth engine is needed, based on non-polluting energy sources and selling non-material services, not polluting products".

The same idea is implicit in the concept of the "circular economy", popularized in recent years by the Ellen MacArthur Foundation. The circular economy is characterized by strategies of reuse, refurbishment, remanufacturing and recycling. The overall aim is to reduce the linear throughput associated without compromising the quality of the services that material goods can provide.

Here, Tim Jackson proclaims that we have something in the way of a blueprint for what such an economy might look like. It gives us more of a sense of what people are buying and what businesses are selling in this new economy.

It also gives us an insight into the kinds of jobs that characterize the new servicebased economy, says Jackson. They will differ in some precise ways from jobs in the prevailing consumer economy. And, perhaps more importantly, there are likely to be more of them.

Work as participation

Work matters, claims Tim Jackson. It's more than just a means to a livelihood. It is also a vital ingredient in our connection to each other – part of the "glue" of society. Good work offers respect, motivation, fulfillment, involvement in community and, in the best cases, a sense of meaning and purpose in life.

Sadly, the reality is somewhat different, says Jackson. Too many people are trapped in low-quality jobs with insecure wages, while others are threatened with long-term unemployment from rapid technological transitions. These processes undermine the creativity of the workforce and threaten social stability. The long-term implications for the economy are nothing short of disastrous.

Youth unemployment rose dramatically through the financial crisis, particularly in developed economies. Two-thirds of European countries now have youth unemployment rates higher than 20 percent. In Greece and Spain, youth unemployment is over 50 percent. This is not only a waste of human energy and talent but a recipe for civil and social unrest. So, there is a huge premium on any strategy that might increase the availability and the quality of employment. At the heart of this problem lies an issue we have already identified as a key dynamic in capitalism – the pursuit of increasing labour productivity; the desire continually to increase the output delivered by each hour of working time.

Though it's often viewed as the engine of progress, the relentless pursuit of increased labour productivity also presents society with a profound dilemma. As each hour of working time becomes more productive, fewer and fewer hours of labour are needed to deliver any given level of economic output. In fact, with labour productivity continually rising, aggregate demand must rise at the same rate if the total number of employed hours is to remain the same. As soon as demand falls – or even stagnates – then unemployment rises.

With labour productivity continually rising, says Jackson, there is only one escape from this "productivity trap". Namely to reap the rewards in terms of reduced hours worked per employee – or in other words to share the available work among the workforce.

So, it's perhaps not surprising to find that proposals to shorten the working week are enjoying something of a revival in recent years, says Tim Jackson. In fact, the idea has a strong pedigree. In an essay titled "Economic possibilities for our grandchildren". Published in the 1930's, John Maynard Keynes foresaw a time when productivity gains would allow us all to work less and spend more time with our family, our friends and our community. Since the time that Keynes was writing, societies have indeed taken some of the labour productivity gains achieved through technology in the form of increased leisure time. Working hours across the OECD have declined by 12 percent since 1970. In France the decline is over 25 percent. In the absence of these overall declines in working hours, unemployment across advanced economies would have been much higher than it currently is.

Sharing the available working time by reducing working hours is thus an important strategy for ensuring that everyone has access to a livelihood, particularly when demand growth is hard to come by, says Jackson. This is the option pursued, for example, by ecological economist Peter Victor, in a study designed to test a low or no-growth scenario for the Canadian economy. The key policy intervention used to prevent wide-scale unemployment is halved in Victor's model, even as GDP output stabilizes.

A telling example of the practical success of work share in maintaining employment, says Jackson, is the case of Trumpf, a machine-tool maker in the south German city of Ditzengen. The company managed to get through the financial crisis without laying off any of its 4,000 German workers, while in the US the same company laid off almost 15 percent of its workforce. The difference was that, in Germany, Trumpf took advantage of government incentives to reduce working hours rather than firing people.

Workshare is a natural companion to any proposals involving a slowing down of economic growth, says Jackson. But it turns out there is another rather interesting way of addressing the same problem. Namely, to challenge the assumption of ever-increasing labour productivity.

If the idea of resisting productivity growth sounds perverse at first, warns Jackson, it is probably because we've become conditioned by the language of efficiency. Time is money. Productivity is everything. The drive for increased labour productivity occupies reams of academic literature and haunts the waking hours of CEO's and finance ministers across the world. It isn't just ideology, of course, says Jackson. Our ability to generate more output with fewer people has been at least partly responsible for lifting our lives out of drudgery. How many people nowadays would prefer to keep their accounts in longhand, wash hotel sheets by hand or mix concrete with a spade? A few may still – with good reason – prefer the humble broom to the diabolical (and wholly unsustainable) "leaf-blower". But between the back-breaking, demeaning and the downright boring, increased labour productivity has a lot to commend itself. On the other hand, says Jackson, this logic doesn't mean we should eliminate labour altogether. Work remains one of the ways humans participate meaningfully in society. Reducing our opportunities to work – or reducing the quality of the experience in doing so – represents a direct hit on our prosperity. And there are clearly situations in which the pursuit of labour productivity growth makes much less sense. Certain kinds of tasks rely inherently on the input of people's time.

The care and concern of one human being for another, for instance, is a peculiar "commodity". It cannot be stockpiled. It is not deliverable by machines. Its quality rests primarily on the attention paid by one person to another. This is not to say that technological advances offer nothing to the caring professions. They clearly do. But these advances cannot ultimately substitute for the time spent by caregivers. Pressuring nurses, doctors, teachers and care workers turns out to be counterproductive in all sorts of ways. Compassion fatigue is a rising scourge in a health sector hounded by meaningless productivity targets.

Something similar happens in handicraft, says Jackson. It's the accuracy and detail inherent in crafted goods that endows them with lasting value. It's the attention paid by the carpenter, the potter, the seamstress or the tailor who makes this detail possible. Chasing time out of the production process reduces costs. But when time is what endows the product with quality, there's a danger that value itself is eroded.

A parallel phenomenon occurs in the creative industries. As the US economists William Baumol and William Bowen pointed out half a century ago, it's the time spent in rehearsal that makes for a god musical performance. It's the hours in the studio that lead to an enduring piece of art. Indeed, artistic endeavours generally tend to resist the logic of labour productivity because their vital ingredient is the time and the skill of the artist. Nothing much is to be gained – and much would be lost – by asking the New York Philharmonic to play Beethoven's 9th Symphony faster and faster each year.

For a whole range of professions, says Jackson, it seems, time spent by people in the exercise of care, craft and creativity is the core value proposition. Nothing quite substitutes for the hours spent in work. Time is quality: it's a different take on things, but which offers an instantly recognizable and distinctively more human social logic than the one which sees work as chore and labour as cost.

Strikingly, says Jackson, these sectors of the economy – care, craft, culture – are exactly the ones identified in this chapter as the basis for a renewed vision of enterprise. Service-based activities – of a kind described in the previous section – are inherently labour intensive as well as being potentially lighter in environmental terms.


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Figure 8.1 illustrates both these characteristics. On the vertical axis, it maps the carbon footprints associated with different economic sectors. And it clearly confirms the potential for carbon savings from a transition to services. The carbon footprint of the social and personal services sector (where many of the activities discussed above reside) is between three and five times smaller than the footprint of the manufacturing or extractive sectors.

The horizontal axis of Figure 8.1 maps the employment of labour intensity of each sector. The labour intensity of the "social and personal services" sector is almost double that of the manufacturing sector and three times that of the financial services sector. In short, the Cinderella economy is carbon light and employment rich.

There's good reason for both these characteristics, says Jackson. On the one hand, services don't inherently require a given level of material throughput. And on the other, they tend to resist the pursuit of labour productivity: the desire continually to increase the output delivered by each hour of working time. In summary, Figure 8.1 reveals a compelling alternative to reduced working hours as a means of combatting the productivity trap. Namely, it suggests a shift to more employment-rich sectors. Or put differently, a transition to sectors with lower labour productivity – and lower productivity growth. If labour productivity across the economy is no longer continually rising, and possibly even declining, then the pressure on jobs is considerably lower.

Perhaps the most telling point of all is that people often achieve a greater sense of wellbeing and fulfilment, both as producers and as consumers of these materially- light, employment- rich activities, than they do in the time-poor, materialistic, supermarket economy in which much of our lives is spent.

In short, says Jackson, achieving full employment may have less to do with chasing endlessly after labour productivity in the hope of boosting growth and more to do with building local economies based around care, craft and culture. In doing so, we have the potential to restore the value of decent work to its rightful place at the heart of society.

Investment as commitment

Achieving such a transition demands investment, Jackson reminds us. But this is not very surprising. Investment is the foundation for any economy. Investment embodies one of the most vital relationships in economics – namely, the relationship between the present and the future. The fact that people set aside a proportion of their income at all reflects a fundamentally prudential aspect of human nature. Engaging in projects that last over time embodies our commitment to the future and is the basis for prosperity of any kind.

The success and sustainability of this commitment strategy depends inherently on the destination for our savings and the focus of our investments. When large proportions of investment are dedicated towards nothing more than asset price speculation, the productive relationship between the present and the future is fundamentally perverted, destabilizing the economy and undermining prosperity.

Even taking speculation aside, says Jackson, the investment portfolio of the conventional economy still fails any robust test of sustainability. Too much of it is directed at the extraction of rents from finite material resources. Much of the rest is dedicated either to chasing labour productivity or to the relentless production of novelty: the creation and recreation of ever newer markets for ever newer consumer products.

The result of these strategies is a portfolio of capital investments dominated by the production and reproduction of consumerism. The vital relationship between the present and the future is distorted through lenses of speculation and shortterm profiteering. And the prospects for transforming enterprise and employment in the ways described above remain heroic at best.

It's worth stepping back for a second says Jackson, just to see if we can reframe investment in ways that support rather than undermine the vision of prosperity outlined in this book. The starting point is simple enough: prosperity today means little if it undermines prosperity tomorrow. Investment is the vehicle through which we build, protect and maintain the assets on which prosperity depends.

This vision allows us to identify the kinds of assets towards which we need investment funds to flow. The provision of basic material capabilities is still in some sense a baseline for prosperity, particularly in the poorest countries. Most obviously, people will always need nutrition, shelter and mobility. Investments in these areas clearly still matters. But if it were made in enterprises focused on the services these goods provide, these investments would already make a difference.

Investment in health, education and social care is also vital. "The ultimate source of any society's wealth is its people", write Stuckler and Basu. "Investing in their health is a wise choice at the best of times and an urgent necessity in the worst of times".

Beyond these basic capabilities, says Jackson, we could certainly turn our attention to the wellbeing of our communities and the strength of our social life.

An investment strategy directed to these ends would build and maintain the physical assets through which individuals can flourish and communities can thrive – what US philosopher Michael Sandel has called "the infrastructure of civic life": schools and hospitals, public transportation systems, community halls, quiet centres, concert halls, museums and libraries, green spaces, parks and gardens.

Needless to say, Jackson adds, not a single one of these services can do away with material and energy inputs completely. Health care requires medicines and lifesaving equipment. Education needs books and computers. Musicians need instruments. Gardeners need tools. Even the lightest recreation activities – dance, yoga, tai chi, martial arts – have to take place somewhere. There is an irreducibly material element to even the lightest economy and the most ethereal vision of enterprise.

But this doesn't mean that our revised investment strategy collapses into the old, familiar one, says Jackson. The critical distinction is to invest in assets that maximize our potential to flourish with the minimum level of material consumption, rather than in assets that maximize the throughput of material commodities – irrespective of their contribution to long-term prosperity.

Ultimately, it's abundantly clear that we must also invest massively in material efficiency, says Jackson. This is obvious from Figure 8.1. Some sectors that are

absolutely vital for the economy currently have very high carbon intensities. Most notably, the carbon footprint of the utilities sector (which include the production and distribution of electricity and heating fuels) is the most carbon intensive of all. This is hardly surprising, of course. Fossil fuels still provide the lion's share of the world's energy supply. Divesting from the damaging fossil fuel sector and investing in the transition to low carbon energy systems are both essential components of a revised investment strategy.

In fact, says Jackson, one of the most striking developments in the years since this book was first published is the rise of the so-called "divest-invest" movement: a concerted effort, often student-led and supported by progressive funders, to shift investment markets away from fossil fuels and towards renewable energy, energy efficiency, resource productivity and clean technologies.

The movement has gathered an impressive momentum in recent years, says Jackson, spurred on by some high-profile divestments from major investors. In June 2015, the Norwegian parliament agreed to sell off all the coal-based assets in Norway's \$ 900 billion sovereign wealth fund. Divestment is vital not only to avoid locking in the damaging impacts of fossil fuel technology for another half a century, but also to free up much-needed funds to invest in alternatives.

Recapitalising the world's energy systems for a low carbon world is a formidable challenge. In the run-up to the Paris conference in December 2015, the IEA estimated that just meeting the climate pledges made by participating nations would entail investments of \$13.5 trillion in renewable energy and efficiency before the year 2030. Yet it's no longer possible to pretend that this will be enough to meet the two-degree target which has been on the table since Copenhagen, let alone the 1.5-degree target adopted in Paris. The likely investment costs for these more stringent targets could be at least an order of magnitude higher.

The sheer size of the investment needed to transform the world's energy system was one of the motivations for the international consensus around the "green stimulus" in the wake of the financial crisis, says Jackson. As early as 2008, the UK-based Green New Deal group put forward proposals for a low carbon energy system that would make "every building a power station" and the creation and training of a "carbon army" of workers to provide the human resources for a vast environmental reconstruction program.

In the intervening years, remarks Jackson, numerous others have echoed this call. UNEP's global Green New Deal widened the remit of spending to include investment in natural infrastructure: sustainable agriculture and ecosystem

protection. Forests, grasslands, arable lands, wetlands, lakes, oceans, soils and the atmosphere itself are all essential in providing the services on which life itself depends.

Certainly, the economic rationale for investing in natural assets is unassailable, says Jackson. Ecosystems provide many trillions of dollars' worth of services to the world economy. Many of these ecosystems lie outside the formal realm of the market. But protecting and enhancing them is vital to our economic productivity in the future, as UNEP pointed out.

Less clear are the impacts this vast portfolio of investment might have on economic performance, says Jackson. There are again those who have argued that it could deliver a new "engine of growth". In a paper entitled *Towards a Green Economy* published in 2011, UNEP even argued that "green growth" based around "green investment" would be faster than "brown (or conventional) growth".

This is a somewhat contentious argument, says Jackson, but for now it is clear that this new investment portfolio is essential, irrespective of its impacts on conventionally measured growth. Its key aims must be to protect natural assets, improve resource efficiencies, implement clean, renewable technologies and build the infrastructures needed for a less materialistic and more satisfying life.

Some of these investments – for instance, those in natural assets and public goods – may have to be judged against criteria other than financial market success. This might mean rethinking the way that investment works; the structure of ownership of assets and the distribution of surpluses from them. But the indispensability of the strategy outlined here is blindingly obvious, says Jackson.

Money as social good

The biggest challenge for such an investment strategy, says Tim Jackson, is the question of financing. So far in this chapter, we've been concerned mainly with what is sometimes called the "real economy". It's a term often used to describe the patterns of employment, production, consumption and investment in the economy. But it is useful to distinguish this real economy from the financial or "money economy".

The money economy describes the wider set of financial flows on which the real economy depends. It includes the flow of money into and out of different economic sectors, the process of borrowing, lending, creating money (the money supply) and the changes in the financial assets and liabilities of different economic actors. These stocks and flows of money are essential to the financing of investments in the real economy.

This is a complex terrain even to politicians and mainstream economists, says Jackson. Sometimes this complexity seems almost willful; designed to obscure the profound implications of an economy that benefits the rich and massively inhibits government's powers of social investment. If so, it's been broadly successful. "It is well enough that the people of this nation do not understand our banking and monetary system", said the US car manufacturer Henry Ford in the 1930's. "For if they did, I believe there would be a revolution before tomorrow morning".

To many non-economists, says Jackson, the existence of a debt-based money system comes as a complete surprise. We tend to think of money as something printed (or brought into existence electronically) by the Central Bank under the control of government. The reality is that less than 5 percent of the money supply is created this way. Most money circulating in advanced economies is created by commercial banks, almost literally "out of nothing".

When a bank agrees to create a loan to a business or a household, says Jackson, it simply enters the amount as a loan on the asset side of its balance sheet and the same amount as a deposit on the liability side of its balance sheet. This deposit is then available to spend on goods and services in the economy. Banks create money by making loans.

There are several important implications of this debt-based money system, says Jackson. One of them is the degree of instability that ensues when things go wrong. Another is that government itself can only finance social investment through commercial (interest-bearing) debt. Another still is that the investment portfolio outlined in this chapter ends up having to compete for credit worthiness against all sorts of other sometimes unsavory commercial investments.

Sustainable investments must vie for funds, for example, with financial speculation in commodities, property or financial assets. It must prove its worth against entirely unsustainable consumer lending – in which repayment (and punishment for non-payment) is reinforced by legal institutions. It must compete with investments in dirty, extractive industries that degrade the environment, and in supply chains that are profitable only because they involve various forms of modern slavery.

Many of these massively unethical investments will offer highly attractive rates of return in the short term. But in the long term they are entirely unsustainable, says Jackson. The social costs of conventional investment (including the huge cost of unrestrained speculative trading) are rarely factored into financial decisions. Worse still, these costs are borne ultimately by the taxpayer. By contrast, the social benefits of more sustainable investments are almost invisible to mainstream funders who tend to look at unfamiliar portfolios and see only higher risk.

The ethical basis of sustainable investment only rarely attracts a premium, says Jackson. But where it does, it is clearly an important source of financing for the kind of investment proposed here. Impact investing – the channeling of investment funds towards ethical, social and sustainable companies, technologies and processes – is an increasingly important element in the financial architecture.

This kind of investment was in the past seen more as a form of philanthropy. But as the US-based Capital Institute has recently pointed out, it should be seen as a vital complement both to philanthropy proper and to government funding: "a way to leverage secure philanthropic and public sector dollars, while harnessing the power of social entrepreneurs and market-based solutions to solve some of the world's most intractable problems".

At the very local level, says Jackson, impact investing meets another profoundly useful social innovation. Community banking is a way of mobilizing the savings of ordinary people for social or environmental finance. Community banks allow people to invest in their own community – for example in low carbon energy, or in community amenities, and at the same time ensure that the returns from those investments remain within the community.

A fascinating example of small-scale peer-to-peer lending for social and ecological projects is proved by SPEAR –a French savings intermediary that aims to facilitate transparent, responsible investment. Savers can choose the projects in which they want to invest and receive information from the projects themselves as they progress. The average return to savers during 2012 was two percent.

A similar example from North America is the Unified Field Corporation – a California-based community banking initiative. Its Regenerative Communities Initiative develops financial plans for sustainability projects in nine different areas, including organic local food systems, water quality, renewable energy, mobility, affordable green housing, education and the arts.

One of the most popular models for community investment is the credit union: cooperative financial institutions in which individual members pool their savings to provide loans to other members, says Jackson. There are over 6,000 credit unions in the United States alone, holding \$1 trillion in assets and serving 100 million people – more than 40 percent of the economically active population. Though subject to the same regulations as banks, credit unions are typically smaller, more local and designed specifically to be non-profit-making institutions.

Some smaller banks have also pioneered a portfolio of lending which looks similar to the investment strategy outlined in the previous section, says Jackson. One such example is Triodos Bank, whose entire ethos is built around positively screening its portfolio to invest only in sustainable and ethical projects. Founded in 1980, the bank now finances over 300 sustainable energy projects in Europe generating some 740 megawatts of electricity.

There's considerable potential here to make money work better – to have it support rather than undermine the long-term prosperity of local communities. But it's also very clear that, by comparison with mainstream financial flows, the scale of this funding is simply insufficient to make the transformation happen.

What's needed is either a massive scaling up of these small-scale initiatives, a radical transformation of mainstream finance itself, or a massive public investment program of a scale not seen in Western economies since at least the Second World War.

A key element in any of those strategies is going to be the nature of the money supply itself, says Jackson. Triodos Bank bears one striking difference to many ordinary banks: it only lends out money deposited in the bank by savers and investors. In other words, it doesn't engage in the kind of debt-based, credit creation that lay at the heart of the financial crisis.

There are some rather strong arguments in favour of changing the existing debtbased money system and returning a greater degree of control over the money supply to government, says Jackson. The so-called Chicago plan – which calls for 100 percent backing of bank deposits with government-issued money – was first put forward in the 1930's by the US economist Irving Fisher and supported most notably by the Chicago School economist Milton Friedman.

There have been a many recent calls to revive this idea – perhaps most surprisingly from the International Monetary Fund, says Jackson. A recent IMF working paper identifies several clear advantages to the plan: its ability to better control credit cycles, the potential to eliminate bank runs, and the effect of dramatically reducing both government debt and private debt. The plan would essentially return control of the money supply directly to the government.

Similar proposals call for an end to banks' power to create money and the implementation of a so-called "sovereign money" system. In such a system, says Jackson, governments would no longer have to raise money for public spending

and investment on commercial bond markets. Instead, they could spend directly into the economy, as and when financing was needed, subject only to the caveat that such spending was non-inflationary. Proposals for such systems are currently under consideration in Iceland and in Switzerland.

"When economists of the caliber of Simons, Fisher, Friedman, Keynes and Bernanke have all explicitly argued for a potential role for sovereign money and done so while believing that the effective control of inflation is central to a wellrun market economy", argues Adair Turner in a characteristically guarded tone, "we would be unwise to dismiss this policy out of hand".

What's at stake here is the nature of money itself as a vital social good, says Jackson. Money facilitates commercial exchange; it provides the basis for social investment; it has the power to stabilize the economy. Handing the power of money creation over to commercial interest is a recipe for financial instability, social inequality and political impotence. Reclaiming that right in the national interest is a powerful tool in the struggle for a lasting and inclusive prosperity.

The economy of tomorrow

The boom-and-bust economy of the last century has created financial instability, claims Tim Jackson, increased social inequality and led to environmental degradation and resource depletion. Austerity has exacerbated these dangers. Chasing prosperity through over-financialized hyper-consumerism has sown the seeds of its own collapse.

None of this is inevitable, says Jackson. The dimensions of a post-crisis economy can be derived from simple first principles. Enterprise as service, work as participation, investment as commitment to the future and money as a social good: these four principles provide the foundations for transformation. Ultimately, all of them flow from an understanding that the economy is not an end it itself but a means towards prosperity.

The concept of service provides for a new vision of enterprise: not as a speculative, profit maximizing, resource-intensive division of labour, but as a form of social organization embedded in the community, working in harmony with nature to deliver the capabilities that allow us to prosper.

Work is vital to those capabilities, says Jackson. What we've identified here is the existence of a "sweet spot" of good work, with multiple benefits for society, in the economies of care, craft and creativity. We can't live entirely from these sectors. But they hold the key to expanding the quality of our lives. And We can usefully import the principles we find there into other economic sectors.

Investment embodies our hopes for the future. What we invest here and now determines how our lives (and our children's lives) will go in the future. A clear and definable investment portfolio emerges from the analysis in this chapter. Its aim is to build, nurture and sustain the assets on which tomorrow's prosperity depends.

Making all this work depends on having a financial system that is fit for purpose, says Jackson. Improving the ability of ordinary people to invest their savings responsibly, in ways that benefit both their own community and a wider environment, is paramount. But deeper and more decisive changes are also needed. Reforming the money system is not just the most obvious response to the financial crisis. It is an essential foundation for the economy of tomorrow.

There's something distinctly odd about our contemporary refusal to question economic growth, says Tim Jackson. As early as1848, John Stewart Mill, one of the founders of classical economics, reflected on the advantages of a "stationary state of population and capital". He insisted that there would be "as much scope as ever for all kinds of mental culture, and moral and social progress" within such a state.

Keynes' essay "Economic possibilities for our grandchildren" also foresaw a time when the "economic problem" would be solved, and we would "prefer to devote our future energies to non-economic purposes". Like Mill, Keynes saw this change as broadly positive in the sense that we would "once more value ends above means and prefer the good to the useful".

In the language of this book, says Jackson, Keynes and Mill were both essentially saying that prosperity without growth is not just possible but desirable. These two were both mainstream economists in their day. They are cited often enough by mainstream economists today. But few mention these passages. Even fewer seem prepared to think in concrete terms about the implications of a "post growth" economy.

One of those who has thought in such terms is the former World Bank economist Herman Daly, who made a pioneering case for a "steady state economy" almost four decades ago now. Daly defined the ecological conditions for this economy rather precisely. If we're to remain within ecological scale, he said, there must be a constant physical stock of capital assets, capable of being maintained by a rate of material throughput that always lies within the regenerative capacities of the ecosystem. Anything other than this, argued Daly, will ultimately erode the basis for economic activity in the future. In one sense, says Jackson, these conditions motivated the vision outlined in the previous chapter – with very specific implications for enterprise, work, investment and money. What's still missing from that vision is a coherent overview, a sense of how these things all fit together and make sense in economic terms.

In short Jackson says, we need a convincing macroeconomics for a "post-growth" society. One in which neither economic stability nor decent employment rely inherently on relentless consumption growth: one in which economic activity remains within ecological scale and one in which our ability to flourish within ecological limits becomes both a guiding principle for design and a key criterion for success.

The aim here is to elaborate on that task. In particular, I want to make the case that the foundations identified in the previous chapter can in fact be integrated into a coherent macroeconomic whole. The full extent of that task lies beyond the scope of this (and probably any single) book. Nonetheless, I hope to show that the task is definable, meaningful and achievable.

The dilemma of growth has us caught between the desire to maintain economic stability and the need to remain within ecological limits, says Jackson. On the one hand, endless growth looks environmentally unsustainable; on the other hand, degrowth appears to be socially and economically unstable.

Logically speaking, says Jackson, there are two distinct escape routes from this dilemma. One is to make growth more sustainable; the other is to make degrowth more stable. There's a particularly striking (and Sometimes acrimonious) division between those who choose differently between these two options. Some continue to argue, with increasing vehemence, for growth at all costs. Others have begun, sometimes vociferously, to campaign against it.

In this latter category, says Jackson, falls the *degrowth movement*: an intellectual challenge to the mainstream paradigm that was in its infancy when the first edition of this book was published. In the intervening years, that challenge has become both more visible and more relevant. Not least because, growth has shown itself to be haunted by instability.

When inherent instability can only be held at bay by ratcheting up the very dynamics that caused the instability in the first place, we know we're in trouble. When the very mechanism for maintaining stability ends up undermining its own resource base, it's time to start looking elsewhere for inspiration. Sticking

with the status quo just leaves us staring into the face of impending disaster. Growth itself is an accident waiting to happen.

But acknowledging this reality does little to reduce the force of the underlying dilemma, says Jackson. Once consumption begins to falter the economy starts running into trouble. Investment falls, jobs are lost, businesses go bust, government deficits rise and the economy risks falling into a deflationary spiral The degrowth response to this challenge is an interesting but not entirely satisfactory one, says Jackson. One of the catchphrases of the movement insists that "our degrowth is not their recession". Degrowth is not the opposite of growth or even the absence of growth. Rather it is, in the words of its proponents, a "missile concept" designed to "open a debate silenced by the 'sustainable development' consensus".

So far so good, says Jackson. Imagining and enacting alternative visions is absolutely the task that motivates this book as a whole and the last few chapters in particular.

But what does this mean for the economy as a whole? Is production expanding or contracting? Is demand rising or falling? The word "degrowth" suggests that one or other of these things is falling. In which case, the challenge is to show how the consequences associated with the second horn of the dilemma are to be avoided.

How are jobs protected? How are debts managed? How is stability ensured? Oddly, the questions themselves have not always met with approval from the degrowth movement, many of whom call for an "exit from the economy" and regard degrowth as "an invitation to abandon economistic thinking".

There is clearly a question mark over how much of the existing architecture it might be possible to keep in a post-growth world. But the idea that we can do without economics altogether must surely be wrong. This is not the moment to abandon the aim of making economic sense of the world; but rather an opportunity to build a new economics fit for purpose in addressing the enormous challenges we are already facing, asserts Tim Jackson.

In a sense, degrowth advocates have no problem at all accepting the first horn of the dilemma: that growth is unsustainable. But they tend to deny the validity of the second. Degrowth is not necessarily the same thing as negative growth, argue its advocates. And so, it doesn't have to lead to instability. But this isn't an entirely satisfactory answer – in part because it gives us too little to go on in building a post-growth macroeconomics.

Ironically, there is a far bigger, equally passionate and often much more powerful lobby who take almost exactly the opposite position. That is, they have no problem accepting the proposition that degrowth is unstable, but they insist absolutely that economic growth is (or at least can become) sustainable. They refuse, almost out of principle, to countenance a post-growth society.

Green growth, smart growth, inclusive growth, sustainable growth: these terms characterize the pro-growth position, says Jackson. They all lay claim to the sunny uplands, a place where it is possible to reduce poverty, meet our environmental targets and overcome our resource constraints while never sacrificing the ability to go on expanding the economy – indefinitely.

The means to achieve this heroic end is decoupling. Endless improvements in the material efficiency of the economy to reduce the overall material throughput even as the economy continues to expand. In this way, claim the green growth protagonists, it will always be possible for the economy to get bigger while the impacts on the planet diminish.

There must of course be some limits to this process. Herman Daly makes the point colourfully "The idea of economic growth overcoming physical limits by angelizing GDP is equivalent to population growth by reducing the throughput intensity or metabolism of human beings", he wrote, over 30 years ago. First pygmies, then Tom Thumbs, then big molecules, then pure spirits. Indeed, it would be necessary for us to become angels in order to subsist on angelized GDP.

But we are almost certainly still some way from those limits, says Jackson. So, a more relevant question is whether (for the foreseeable future) the rate of decoupling can outpace and continue to outpace the rate of growth. If it can, then the economy can afford to grow indefinitely while its impacts on the planet diminish. If it can't, then decoupling cannot ultimately do the work required of it by the proponents of green growth. It cannot solve the dilemma.

Here we can certainly make some progress by paying careful attention to the arithmetic, says Jackson. It quickly transpires that the technological demands are huge, particularly in a fast-growing economy. But it's also the case that enormous technical potential for change exists. Renewable energy technologies, material efficiency improvements, a low-carbon world: all of this is theoretically possible, even with today's technology. So, it comes down to whether it's possible to implement this potential for decoupling. The most crucial question of all turns out to be about society rather than about technology. Is this massive technological transformation possible in our kind of society?

To summarize massively, says Jackson, the answer suggested in this book is no. In our kind of society, in this kind of economy, it is highly unlikely that we will be able to decouple fast enough to remain within environmental limits or (ultimately) to avoid resource constraints. This is not to reject the technological potential claimed by the green growth advocates, says Jackson. On the contrary, it's clear that it's huge. But that isn't quite the end of the matter. Social logic and the structure of enterprise conspire against us. Simply recognizing the power of technology doesn't justify the faith that the eco-modernists want to place in it in their attempt to defend the status quo: precisely because the answer to what's possible depends inherently on the nature of the status quo.

This is the chain of logic that led us first to explore the potential for an alternative vision and then lay down the foundation for a different sort of economy. It is clear enough that this vision and these foundations represent a significant departure from conventional economics. It is not yet clear where they leave us in terms of the dilemma of growth.

Beyond the rhetorical divide that separates growth from degrowth lie two serious questions still worth asking. Is the economy of tomorrow a growth-based economy or not? Is the economy of tomorrow stable or is it not? These questions still count. A response to the dilemma of growth still matters. So, let's turn our attention first to the question of growth.

Is the economy of tomorrow a growth-based economy?

First, says Jackson, it's abundantly clear that tomorrow's economy should not be growing in material terms. Daly's conditions (and Rostrom's planetary boundaries) are precise on this point. Continual material growth would compromise our ability to remain within the "safe operating space" of the planet and undermine our future prosperity. The point about the interventions in the previous chapter is to reduce in absolute terms the material throughput of the economy.

Second, we should underline that some things within this economy will still be growing. Who could argue against an increase in wellbeing? Or an increase in jobs? Or in the integrity of our natural assets, the resilience of our communities, the quality of our environment, our sense of purpose? All of these things and many more could still be growing. As a campaign for Triodos Bank puts it: "growth is about more than just numbers".

But neither the absence of material growth nor the presence of immaterial growth resolves the dilemma of growth. The critical question is whether the economy itself is still expanding in economic terms. This is one of those points where, for all its faults, the GDP still matters. Not because it's a good proxy for prosperity – it clearly isn't. But because it's the scale of economic activity which is pertinent to the dilemma of growth. So, the question we're asking is whether

the interventions identified in chapter 8 lead to more growth or to less growth. Let's look first at investment.

Does sustainable investment increase or diminish growth?

In the conventional model, investment has two main targets, says Jackson. The first is to increase labour productivity. The second is to stimulate innovation. The latter is critical to the former in creating an expansion of demand, without which the pursuit of labour productivity could simply lead to a rise in unemployment. These two primary roles for investment provide for a virtuous circle when things are going well and a vicious cycle when they're not.

The portfolio of investment outlined in chapter 8 has a very different character. It consists in building and maintaining the assets from which economic services flow. In particular, it targets the capabilities needed for people to flourish nutrition, health, education, enjoyment, ecological resilience. The traditional function of investment, framed around increasing labour productivity, is likely to diminish in importance. Innovation will still be vital, but it will be targeted more carefully towards a lasting prosperity: better services with few environmental impacts.

Perhaps most obviously, in shifting away from the pursuit of labour productivity and consumer innovation, says Jackson, we have removed the most obvious source of expansion both of supply and of demand in the economic structure. Overall productivity growth may well decline if labour productivity is no longer a primary focus for investment. And the continual expansion of demand associated with product innovation is also likely to be more subdued in an economy focused on the quality of services rather than the relentless novelty of consumer products.

On the other hand, says Jackson, there are some countervailing forces. Investments in resource productivity are likely to have a positive impact on overall productivity. Some investments in renewable energy are likely to bring competitive returns in some market conditions, particularly where these are supported by policy. But in other conditions considerably lower returns might be expected over much longer time frames than traditional financial markets expect. If this were not the case, Jackson reminds us, we would expect to see a lot more renewable energy investment – on the open market – than we currently do.

In the short term, however, we might be justified in expecting both resource productivity and renewable energy investments to show some positive contribution to productivity growth. Investments in ecosystem protection or in adaptation to environmental change, on the other hand, might not bring conventional financial returns at all, even though they are vital to the protection of ecosystem services.

Such ecological investments (like all investments) still contribute to aggregate demand. But they make no direct contribution to aggregate supply. They are absolutely vital in protecting environmental integrity. And this in turn is vital for sustaining production at all over the long term. But in the short term, they appear to "soak up" income without increasing economic output.

In summary, says Jackson, this new portfolio of "slow capital" is likely to have lower rates of return and longer periods of return than the extractive and speculative investments that characterized investment markets over the past few decades. These new characteristics are useful in some respects. They fit better the needs of long-term savings vehicles such as pension funds for instance. But they don't immediately suggest that green investment will give us more productivity and faster growth than conventional investment. Some of these new investments, essential though they are, for long-term output, may well slow economic growth down.

Jackson then turns his attention to services, asking the question:

Do services provide a "new engine of growth"?

Here the question is much easier to answer, he says. We can bring both a clear conceptual model and a good deal of empirical evidence to bear on it. Both of these suggest that a service-based economy will grow considerably more slowly than a product-based one.

We've touched already on the reasons for this. Certain kinds of services – particularly in care, craft and culture – resist labour productivity growth. Empirical data support this finding. Between 1995 and 2005, for instance, labour productivity in the personal and social services sector declined by three percent across the EU 15 nations. It was the only sector to show negative productivity growth.

The issue has long been recognized in economics, says Jackson. Somewhat pejoratively, it's often referred to as "Baumol's cost disease' after the US economist William Baumol, who has devoted a substantial portion of a distinguished career to studying the differential performance of service sector activities.

The core of Baumol's argument is simple enough to convey. Wherever there is a differential in the productivity growth in different sectors of the economy, there is a tendency for the costs of the less productive sector (Baumol calls this the

"stagnant" sector) to rise in real terms relative to those of the more productive sector (which calls the "progressive" sector).

The reason for this relative increase is that wages across the economy will typically tend to follow the wages in the highest paid sector, says Jackson. Since wages typically rise with labour productivity, the wage level will be set by the progressive sector. Higher wages won't increase costs in the progressive sector because labour productivity will rise as well. But in the "stagnant" sector, there is no way for firms to protect against wage rises by increasing labour productivity. So, the cost of these activities will inevitably rise.

There are a couple of possibilities for the fate of these "stagnant" sectors, says Jackson. If the demand for their services is price elastic (i.e., demand for them falls when prices rise), then they will progressively lose demand, as prices rise higher and higher. Ultimately, we might expect such services simply to disappear from the economy. Local repertory theatres might be a case in point here. Faced with competition from "merchandise"-dominated online entertainment (for instance), professional local theatre is at best heavily subsidized and sometimes declining fast in "rich" economies.

A similar fate could beset certain repair or renovation services, says Jackson, particularly where newly manufactured goods are even cheaper to acquire, there is less incentive to engage in costly repairs or renovations. If on the other hand, the demand for services is price inelastic (i.e., it doesn't change much whatever the price), then Baumol's cost disease predicts that this sector will represent an increasing proportion of the real expenditure across the economy. This would be the case for the health services, for instance, and perhaps for education.

There are real dangers in either case. First, it's likely that useful services, which could contribute positively to human wellbeing and reduce our impact on the planet, will simply disappear. Second, those essential services that are typically provided by government (at local or national level) will be under constant pressure to make "efficiency savings" or perhaps be cut altogether, because they will inevitably represent a higher and higher proportion of the GDP as time goes by.

"A disturbing moral of this story", writes Baumol, "is that the products most vulnerable to the cost disease include some of the most vital attributes of civilized communities: health care, education, the arts...all of these services suffer from the cost increases that are both rapid and persistent". Ultimately, says Jackson, Baumol and Nordhaus are abundantly clear: an economy that insists on maintaining (let alone expanding) its service sector is heading for zero growth. "An attempt to achieve balanced growth in a world of unbalanced productivity must lead to a declining rate of growth relative to the growth of the labour force", writes Baumol.

Nordhaus confirms this hypothesis empirically across the US economy. "Perhaps the most important macroeconomic result is the operation of Baumol's growth disease over the last half of the twentieth century", he writes. "The growth disease has lowered annual aggregate productivity growth by slightly more than one-half percent over the last half century". To be clear, says Jackson, what Nordhaus is saying here is that Baumol's disease is at least partly responsible for the secular stagnation that we have already seen across the advanced economies.

The picture for the UK is particularly striking (Figure 9.1), says Jackson. A phenominal slowdown in productivity growth has occurred in just half a century. This trend growth rate rose from less than one percent per year in 1900 to reach four percent per year in 1966. It declined sharply past that point. Digital and information technology slowed (but did not reverse) the decline through the 1980's and 1990's. Soon after the bursting of the dot-com bubble at the turn of the millennium, and long before the financial crisis, the decline began to accelerate. By 2013, trend labour productivity growth was negative. The value of the output produced in each hour of work is currently declining in the UK.



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The implications for economic growth are profound. In these circumstances, per capita growth is only possible by increasing the labour force or by having everyone work longer hours.

In short, the idea of a structural shift towards services makes a lot of sense, claims Jackson. For this reason alone, the chances are that the economy of tomorrow has a considerably slower rate of economic growth and may already be heading towards a stationary or quasi-stationary state.

Professor Jackson now turns to the question of instability.

Confronting instability

If the economy of tomorrow is a "post-growth" economy not just in concept but also in measure, then what can we say about the second horn of the dilemma of growth? asks Jackson. Are we inevitably heading towards macroeconomic instability? Or are there ways in which the structural foundations of this new economy might mitigate instability and in doing so allow us to escape the dilemma?

These are amongst the most profound and the most important questions raised by the enquiry in this book. And it's extraordinary to find, more than 80 years after Keynes' essay and twice that since Mill's defence of the stationary state, that we have virtually nothing to go on to help us answer them. There is currently no fully-fledged macroeconomics for a post-growth economy. Yet that is precisely what is needed, not just for environmental but also for secular reasons.

What happens to employment when material consumption is no longer expanding? What happens to inequality as conventional growth rates decline? What can we say about financial stability when capital no longer accumulates? What happens to the public sector in the face of declining aggregate demand?

A fully articulated post-growth macroeconomics lies beyond the scope of this book, Jackson tells us. However, research undertaken since the financial crisis does allow us to make more progress towards this task than was possible when the first edition of this book was published.

Take, for example, the relationship between demand, employment and labour productivity. This relationship is fundamental to the growth dilemma. It suggests that, as demand stagnates, unemployment inevitably rises, causing inherent social instability.

The most often-cited remedy for this problem is to "share the available work" by reducing the average working week. This solution was proposed for example in Peter Victor's *Low Grow* model for the Canadian economy, cited in the previous chapter. It has also been explored in some detail in recent work from organizations such as the New Economics Foundation.

But the prescriptions of the previous chapter offer another, more integrated solution to the "productivity trap". A structural shift towards service-based enterprise entails a reduction in labour productivity growth. Put otherwise, this shift increases the employment intensity of the economy and facilitates full employment.

In a series of economic simulations, calibrated loosely for the Canadian and UK economies, Peter Victor and I have shown how this kind of structural shift, in combination with work-time policies, can indeed maintain high levels of employment, even as growth rates decline to (and below) zero.

The transition to services offers a more "holistic" solution to the unemployment challenge of a low-growth economy. The apparent "growth imperative" arising from the pursuit of productivity is less decisive than the dilemma of growth suggests. There are routes to full employment that are entirely consistent both with stagnating demand and with improved prosperity.

Professor Jackson now turns his attention to the possibility that credit might create a growth imperative.

Does credit create a growth imperative?

Conventional wisdom, suggests, for instance, that the mechanism of creditcreation by commercial banks delivers yet another growth imperative. According to this wisdom, the charging of interest on debt leads to instability in the absence of economic growth. Without growth, so the argument goes, it is impossible to service interest payments and repay debts, which would therefore accumulate unsustainably and eventually destabilize the economy.

The claim has been made, for instance, by the late ecological economist Richard Douthwaite. In *The Ecology of Money*, Douthwaite suggests that the fundamental problem with the debt method of creating money is that, because interest must be paid on almost all of it, the economy must grow continuously if it is not to collapse.

We have already paid some attention to this debt-based money system and challenged its position in the economy of tomorrow. But if this argument is correct, the implications are profound. A post-growth economy simply could not live inside any recognizable form of capitalism. We would have to systematically dismantle one of the most fundamental aspects of capitalism – the charging of interest on debt – to have any chance of success.

Strangely enough, the understanding itself has been subject to remarkably little in-depth economic scrutiny. There's a reason for this. Understanding the growth

dynamics of credit creation requires an economic model capable of simulating the interaction between the monetary circuit and the real economy – exactly the kind of model that was conspicuous by its absence in the run-up to the financial crisis.

In recent years, there has been a renewed interest in models of this kind. Many of them build on the pioneering work of the late former UK Treasury economist, Wynne Godley, one of the few who was able to predict the financial crisis. Godley and his colleagues developed the concept of stock-flow consistent (SFC) economic models.

The overall rationale of the SFC approach is to account consistently for all monetary flows between agents and sectors across the economy. The approach can be captured in three broad axioms: first, that each expenditure from a given actor (or sector) is also the income to another actor (or sector); second, that each sector's financial assets correspond to financial liabilities of at least one other sector, with the sum of all assets and liabilities across all sectors equaling zero; and finally, that changes in stocks of financial assets are consistently related to flows within and between economic sectors.

These simple undertakings lead to a set of accounting principles that can be used to test any economic model or scenario prediction for consistency as a possible solution to financial flows in the real world. For this reason, SFC models are a powerful tool in the development of a post-growth macroeconomics. It's why Peter Victor and I adopted this approach explicitly in our own modeling work. We decided to test the "growth imperative" hypothesis ourselves directly. Does credit create a growth imperative? Does an interest-based money system necessarily require growth to remain stable? Using a simplified version of our own framework we set out to test the stability of a stationary, or quasi-stationary, economy in the presence of interest-bearing debt and commercial credit creation.

Somewhat to our surprise, we found not only that such a state is possible, but that it is stable across a wide range of different interest rate scenarios. We subjected our hypothetical economy to one-off shocks and to random fluctuations in the level of consumption, and the model remained stable. We also simulated a successful transition from a state of growth to a stationary state without destabilizing the economy.

These findings don't exonerate a credit-based money system, says Jackson. As we saw in Chapter 8, this credit creation can lead to unsustainable levels of public and private debt, increased price and fiscal instability, speculative behavior in

relation to environmental resources, greater inequality in incomes and in wealth, and a profound and debilitating loss of sovereign power in the economy. Monetary reform remains an essential component in the economy of tomorrow, asserts Jackson. But the results of our model suggest that it is not necessary to eliminate interest-bearing debt per se, if the goal is to achieve a resilient, stationary or quasi-stationary state of the economy. In short, one more impossibility theorem against a post-growth economics turns out to be false.

Finally, Tim Jackson turns his attention to the stabilizing role of government. There were some surprising corollaries to our overall finding, he says. One of them was the absolutely critical importance of government fiscal policy. Just as Keynes predicted, government spending has the power to stabilize or to destabilize the economy.

The stabilizing role of government

One of the simulations explored the outcome of a "strict austerity" policy. Following a one-off consumption shock, government responds by cutting spending in order to try and reduce the fiscal deficit to zero. The result is a disaster. Consumption and investment both collapse and debts escalate uncontrollably, reinforcing the insights of all those who criticized austerity in the wake of the financial crisis.

With the wrong policy, instability is entirely possible in a no-growth economy just as it is in a growth-based economy. Another of our simulations underlined this point. We explored what might happen when the "animal spirits" of investors persuade firms to invest readily depending on their expectations about the future.

Figure 9.2 shows what happens. Scenario 1 represents the initial response of our stationary state economy to a one-off consumption shock. After an initial dramatic reversal, the economy begins to settle down again, supporting our claim that the stationary state is broadly stable under such a one-off event.

Scenario 2 shows what happens when animal spirits are exaggerated. The reluctance of firms to invest in the recession and their exuberance to do so when the economy bounces back sets up a boom-and-bust cycle of increasing amplitude, which will inevitably become unstable.



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Finally, however, Scenario3 in Figure 9.2 illustrates the impact of a "countercyclical" spending strategy. Government increases public spending when output is falling and reduces public spending when output is rising. This strategy has an immediate calming effect on the economy, bringing it back to a quasi-stationary state faster even than occurred (inScenario1) in the absence of animal spirits.

We applied a similar principle to allow government spending to play a moderating role in the transition from a growth-based to a stationary state economy. The principle proved remarkably robust. It appears that government spending provides the means to stabilize an unstable economy under a wide variety of conditions, particularly those that lead ultimately to a stationary state. These findings would come as no surprise to Keynes or indeed Hyman Minsky, says Jackson. Both economists saw fiscal policy as critical to the stability of the economy. Minsky proposed a vital role for governments as "employer of last resort" spending directly into the economy to maintain high levels of employment and stabilize output in times of crisis.

What's emerging here is that strategies of countercyclical spending, social investment and public sector employment play a vital role not just in protection of social wellbeing but in the fundamental dynamics of the post-growth economy.

One final point is worth making, says Jackson. The capability of governments to exercise these stabilizing strategies depends on having an appropriate monetary policy. There may be no case for doing away with the charging of interest on debt

altogether. But there is a strong case for governments to have influence over its own power to invest in social welfare. This chapter underlines the importance of monetary reform to the economy of tomorrow.

Beyond the growth dilemma

My aim of this chapter, says Tim Jackson, has been first and foremost to make the case that a new post-growth macroeconomics is absolutely essential. We cannot entirely predict the growth potential of the economy of tomorrow. But the conditions of enterprise and of investment are certainly likely to reduce the growth potential of the economy, as conventionally measured, even as they also allow us to improve the quality of our society and protect the integrity of our environment.

I've also argued that building such a macroeconomics is a precise and definable task. Starting from clear first principles we can identify the underlying dimensions of this macroeconomy: the nature of enterprise, the quality of work, the structure of investment and of the role of money within it.

The overarching goal for post-growth macroeconomics must be to show how these dimensions can be integrated into a coherent economic framework that delivers high levels of employment, allows for social investment, reduces inequality, and protects financial stability.

In the conventional wisdom, these aims would all appear to be impossible. Economic stagnation is a recipe for high unemployment, rising inequality, escalating debt and increased financial instability, in this view. But this chapter has shown that a systematic approach to these challenges reveals surprising avenues of possibility.

Apparent growth imperatives dissolve under a closer scrutiny. Apparent impossibility theorems turn out to be no more than gatekeepers, standing guard over the transition to a post-growth economy, but armed mainly with false assumptions and outdated precepts.

There is a sense in which this should not surprise us. Economics is an artifact of human society. Its apparent intractability is a cultural construct. We devise the rules of the game and establish its mores. We build and regulate the institutions that serve it. Its gatekeepers are the characters in a drama of our own making, says Jackson. Rewriting their role is entirely within our remit. Integrating these insights into a consistent overarching theory is still very much a work in progress. But the overwhelming lesson from the exploration in this chapter is that a coherent "post-growth" macroeconomics is entirely possible.

So, what part does the state play in all of this?

Beyond the conflicted state

The principal role of government, says Tim Jackson, is to ensure that long-term public goods are not undermined by short-term private interests. It seems ironic then, tragic even, that governments across the world – and particularly in the liberal market economies – have been so active in championing the pursuit of unbounded consumer freedoms, often elevating consumer sovereignty above social goals and actively encouraging the expansion of the market into different areas of people's lives.

There is a real sense here of institutional schizophrenia, says Jackson. On the one hand, government is bound to the pursuit of economic growth. On the other, it finds itself having to intervene to protect the common good from the incursions of the market. The state itself is deeply conflicted, striving on the one hand to encourage consumer freedoms that lead to growth and on the other to protect social goods and defend ecological limits.

But the reason for this conflict becomes clear once we recognize that the role that growth has conventionally played in macroeconomic stability. It arises directly from the governmentality of the growth-based society. With a vital responsibility to protect jobs and to ensure stability, the state is bound (under current macroeconomic understandings) to prioritize economic growth. And it is locked into this task, even as it seeks to promote sustainability and the common good. Government itself, in other words, is caught in the dilemma of growth.

Overcoming this dilemma is vital, says Jackson. The lessons from this study make it clear that without clear governance, change will be impossible. Individuals are too exposed to social signals and status competition. Businesses operate under market conditions. A transition from narrow self-interest to social behaviours, or from relentless novelty to a considered conservation of things that matter, can only proceed through changes in underlying structure: changes that strengthen commitment and encourage social behavior. And these changes require governments to act.

The thrust of policy over the last half-century – particularly in the liberal market economies – has been going in almost exactly the opposite direction. Governments have systematically promoted materialistic individualism and encouraged the pursuit of consumer novelty. This trend has been perpetrated, mostly deliberately, under the assumption that this form of consumerism serves economic growth, protects jobs and maintains stability. And as a result, the state has become caught up in a belief that growth should trump all other policy goals. But this narrow pursuit of growth represents a horrible distortion of the common good and a misrepresentation of our underlying human values, says Jackson. It also undermines the legitimate role of government. A state framed narrowly as the protector of market freedoms in the unbounded pursuit of consumerism bears no relation to any meaningful vision of social contract. At the end of the day, the state is society's commitment device, par excellence, and the principal agent in protecting our shared prosperity. A new vision of governance that embraces this role is critical.

Knowing that family, community, friendship, health and so on are vital influences on prosperity, and that the ability of the individual to protect these factors is being eroded in modern society, there would appear to be a strong argument in favour of a clearer and more active role for government in this regard.

Equally, accepting that unemployment, injustice and inequality have impacts not just at the individual level but at the level of aggregate wellbeing, there would appear to be an argument in favour of government intervening to protect employment, justice and equality.

Such a role would be, in a sense, a reinvigoration of the idea of the social contract, says Jackson. Within such a contract, a legitimate role for government would be to strengthen and protect commitment devices that prevent myopic choice and, equally importantly, to reduce the pernicious structural impacts of economic development which increase inequality and reduce wellbeing.

Of course, such a vision requires a democratic mandate, says Jackson. "Political change comes from leadership and popular mobilization. And both are needed", argued a former UK Climate Change Secretary, Ed Miliband. Authoritarianism is damaging to human wellbeing. And in any case, it is unlikely to succeed in modern pluralistic societies. A progressive state must engage actively with citizens both in establishing the mandate and delivering the change.

But this doesn't absolve government from its own vital responsibility in ensuring a shared prosperity. The role of government is to provide the capabilities for its citizens to flourish – within ecological limits. The analysis here suggests that, currently, that responsibility entails shifting the balance of existing institutions and structures away from materialistic individualism and providing instead real opportunities for people to pursue intrinsic goals of family, friendship, community, participation and creativity.

This view is by no means simply a luxury of advanced western economies. Politicians are locked into a system that rewards them with power. But it's not power but stewardship that constitutes good governance. Politicians should see themselves as stewards of human potential. Their role is to enable people to reach their full potential as human beings: to provide them with the skills and infrastructure to do so.

For as long as economic stability depends on growth, says Jackson, the conflicted state will struggle to achieve this aim. Short-term electoral aims and short-term economic thinking will prevail. There will inevitably be a powerful tendency for governments to support social structures that reinforce materialistic, novelty-seeking individualism. Because that's what it takes to keep the economy afloat. This is why the findings of the previous two chapters are so vital, says Jackson.

Freeing the macroeconomy from the structural requirements for consumption growth will simultaneously free government to play its proper role in delivering social and environmental goods and protecting long-term interests. The same goal that's vital for a sustainable economy is essential to a progressive state.

Policies for a post-growth society

But, adds Jackson, these considerations are the beginning rather than the end of a serious inquiry into governance for prosperity. They are the starting point for policy: the foundation for a post-growth social contract.

Elaborating on that foundation requires a wider policy dialogue than is possible here, says Jackson. Policy making is a social and political process: it must be informed by its constituencies. But it would be wrong to leave the question of policy hanging in the air completely.

And it's clearly possible already to establish some at least of the direction of travel. A step change in political will is probably essential to make progress in all the proposals outlined below. But that too, I have argued, is surely possible – once the dilemmas that haunt the conflicted state are resolved.

In the following brief paragraphs, I highlight four broad policy themes for a postgrowth society: establishing the limits, countering consumerism, tackling inequality and "fixing" economics.

Establishing limits

The material profligacy of consumer society is depleting key natural resources and placing unsustainable burdens on the planet's ecosystems. Establishing clear resource and environmental limits is vital. Integrating these limits into both economic structure and social functioning is essential.

The work of the Stockholm Resilience Centre has done a lot to place this idea on the policy map. Its single biggest message is that planetary boundaries matter. It's fine of course to dispute exactly where they lie. And which ones are most important. And how we should respond to them. But simply to proceed as though limits were irrelevant to human endeavor is to invite disaster.

If governance is to mean anything, it must inform itself about the constraints that nature imposes on us. Identifying clear resource and emissions caps and establishing reduction targets under those caps is vital to a robust understanding of our own potential – and the threats to our own survival.

This is of course exactly what the IPCC set out to establish in the case of greenhouse gas emissions. The Paris Agreement to "pursue efforts" to restrict global warming to 1.5 degrees above the pre-industrial average establishes a precise set of carbon budgets. Meeting these budgets means adhering to precise emission pathways. We can enact (some countries have already enacted) legislation and policy that will lead our economies along those pathways.

As our scientific understanding of the environment improves, we learn more about the "safe operating space" within which we should remain. That gives us the opportunity to integrate it into our decision-making. This is the first unavoidable step in establishing where we are.

Any government of any political colour or hue can allocate the relatively modest financial resources needed to measure and monitor the material and ecological conditions on which our prosperity depends.

Whether it's carbon emissions and climate change, or deforestation and habitat loss, or the condition of genetic and biological diversity, of the quality of the soil, or the cleanliness of the ocean, or the resource quality of material deposits: a basic understanding of our position in relation to such planetary boundaries is entirely possible.

Uncertainty clearly exists. But the process of measuring and collating data informs our decision-making. We still may be many decades away from absolute resource scarcity. Or we may be considerably closer. We may be remarkably close to some production peaks. We may be slightly further away from others. But a scientific understanding of our best available information about these conditions is vital to proper economic planning.

The single most important message from the very early work on limits to growth was that early action is essential. Leaving our decision-making to the point where these changes are already upon us is a recipe for disaster. Addressing limits early is a key ingredient of success. The best possible scientific understanding of our fragile resource base is an absolute priority.

Countering consumerism

The social logic that locks us into the iron cage of consumerism is extremely powerful. But it's also detrimental to prosperity, both ecologically and psychologically. An essential prerequisite for a lasting prosperity is to free people from this damaging dynamic and provide opportunities for sustainable and fulfilling lives.

Governments are understandably reluctant to intervene in what it perceived as an area of personal or social choice. But changing the social logic of consumption cannot simply be relegated to the realm of individual or community action.

Whatever the latent desire for change, it's notoriously difficult for people simply to choose sustainable lifestyles. Even highly motivated individuals fall prey to conflict as they attempt to live better lives. The chances of wide-scale societal shifts in behavior are negligible without changes in social structure.

Conversely, of course, social structures can and do continually shift people's values and behaviours. Consumerism itself developed as a means of protecting consumption-driven economic growth. The culture of consumerism is conveyed through institutions, the media, social norms and a host of subtle and not so subtle signals encouraging people to express themselves, seek identity and search for meaning through material goods.

There's a very real, historical sense in which the consumer society is an artifact of modernity: co-created by marketers, investors, advertisers, businesses and politicians. Dismantling these complex incentive structures requires a systematic attention to the myriad ways in which they were constructed and are continually re-constructed.

Our first course of action must be to ask searching questions about the balance of the institutions that characterize modern society. Do they promote competition or cooperation? Do they reward self-serving behavior or support those prepared to sacrifice personal gain in the service of others? What signals do schools, universities, business, the media and government itself send out to the people? Which behaviours are supported by public investments and infrastructures, and which are discouraged?

Perhaps the most critical task to hand is to identify (and correct) those aspects of this complex social structure that provide perverse incentives in favour of a materialistic individualism and undermine the potential for a shared prosperity. Advertising is one of the most obvious targets for attention.

Although advertising provides information, it is particularly pernicious in limiting people's mental and spiritual universe. A post-growth economy must

refrain from manipulating our appetites in order to stimulate materialistic desire.

Particular concerns exist over the role of commercial advertising to children. Several countries (notably Sweden and Norway) have banned TV advertising to children under 12. The creation of commercial-free zones such as the one established by Sao Paulo's "Clean City Law" is one way of protecting public space from commercial intrusion.

Another is to provide systematic support for public media through state funding. As the Institute for Local Self-Reliance argues, "communities should have the right to reserve spaces free from commercialism. Where citizens can congregate or exchange ideas on an equal footing.

Stronger trading standards are needed to protect citizens both as workers and consumers. The Fair Trade initiative is a good example of what can be achieved by companies prepared to act on a voluntary basis. But this approach isn't yet extensive enough to protect ecological and ethical standards along all supply chains. Or to ensure that these questions register on people's buying behaviours.

Trading standards should also systematically address the durability of consumer products. Planned and perceived obsolescence is one of the worst afflictions of the throw-away society and undermines the rights and the legitimate interests of people both as consumers and citizens. Creating long-lasting, durable and serviceable products is essential.

At the end of the day, unraveling the culture – and changing the social logic – of consumerism will require the kind of sustained and systematic effort it took to put it there in place to start with. Crucially, though, this effort clearly won't succeed as a purely punitive endeavor. Dismantling consumerism simply isn't enough. Offering people viable alternatives to the consumer way of life is vital.

This means finding new ways to fulfill the social and psychological aspirations which have been given over to material consumption. One way to achieve this is through investment in public amenities and spaces that create opportunities for leisure and self-development. An equally important, complementary strategy lies in the strengthening of communities and the building of strong social ties that enrich human life without enlarging our ecological footprint.

We must nurture and support non-consumerist ways of understanding and being in the world. These ways can draw on a variety of traditions that have always opposed consumerism. They will in turn be strengthened by a retreat from market-driven growth, which inevitably inculcates values, beliefs and ways of being that favour success in the market environment. What this means in practice requires a more detailed exploration than is possible here. It will certainly require a keener policy attention to what it means to flourish and how to measure this, particularly when it comes to questions of community, social participation and psychological wellbeing.

Crucially, these outcomes cannot be delivered in instrumental, ad hoc ways. Policy must pay closer attention to the structural causes of social alienation and anomie. It must have at its heart the goal of a meaningful and lasting prosperity. Progress depends on building the capabilities for people to flourish in less materialistic ways.

Tackling inequality

Systemic inequalities increase anxiety, undermine social capital and expose lower income households to higher morbidity and lower life-satisfaction, says Jackson. In fact, the evidence of negative health and social effects right across unequal populations is mounting. Systemic inequality also drives positional consumption, contributing to a material "ratchet" that drives resource flows through the economy.

Unproductive status competition increases material throughput and creates both psychological distress and social unrest. The British clinical psychologist Oliver James has argued that more unequal societies systematically report higher levels of distress than more equal societies.

This same point has been made by epidemiologists Richard Wilkinson and Kate Pickett. *The Spirit Level* draws together astonishing evidence of the costs of inequality in terms of health and social problems. The broad hypothesis is illustrated in Figure 10.1, which shows a high positive correlation between health and social problems and rising inequality in OECD nations.

Life expectancy, child wellbeing, literacy, social mobility and trust are all better in more equal societies. Infant mortality, obesity, teenage pregnancy, homicide rates and incidence of mental illness are all lower. Tackling systemic inequality is vital, argue Wilkinson and Pickett, and not just for the least well off. Society itself suffers in the face of inequality.

Tackling inequality would reduce social costs, improve quality of life and change the dynamic of status consumption, says Jackson. Little is currently being done to reverse the worsening trends, particularly in the liberalized market economies. But policies and mechanisms for reducing inequality and redistributing incomes are well documented. Potential policy measures include progressive tax structures, minimum and maximum income levels, improved access to education and anti-discrimination.



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Legislation and improving the local environment in deprived areas. Systematic attention to these policies is now vital.

The conditions of equity and ecological limits, taken together, suggest a key role for the model known as "contraction and convergence" in which equal per capita allowances are established under an ecological cap that converges towards a sustainable level. This approach has been applied, to some extent, for carbon.

Similar caps could be established for the extraction of scarce non-renewable resources, for the drawing down of "fossil" groundwater supplied and for the rate of harvesting of renewable resources.

A key point of influence will lie in the structure of incomes and wages, says Jackson. This balance has consistently rewarded competitive, individualistic and materialistic outcomes even when these are socially detrimental – as the lessons from the financial crisis made clear. Reducing the huge income disparities that result from this would send a powerful signal about what is valued in society.

Better recognition for those engaged in childcare, care for the elderly or disabled and volunteer work would shift the balance of incentives away from status competition and towards a more cooperative, and potentially more altruistic, society. Some of these measures could be facilitated by forms of citizens' incomes, an idea that is now being explored in a variety of nations including Finland, the Netherlands, Canada and Switzerland.

"Fixing" economics

A n economy predicated on the continual expansion of debt-driven materialistic consumption is unsustainable ecologically, problematic socially and unsustainable economically, says Tim Jackson. Changing this destructive dynamic requires the development of robust economic thinking. Building a new post-growth economics is an urgent priority. The shortcomings of the conventional system of national accounts (and the GDP as its central measure) are now well documented. The time is certainly ripe to make progress in developing a national accounting framework that provides a more robust measure of social progress and economic performance.

But the task of fixing economics goes beyond simply adjusting our accounts, says Jackson. A new post-growth macroeconomics must address the dynamics of a slower, more labour-intensive economy, with a significantly changed portfolio of investment.

The new portfolio of investment demands a different financial landscape from the one that led to the collapse of 2008. Long-term security must be prioritized over short-term gain and social and ecological returns must become as important as conventional financial returns. Reforming capital markets and legislating against destabilizing financial practices are not just the most obvious response to the financial crisis; they are also an essential foundation for a new sustainable macroeconomy.

Social investment is likely to play a key role in the new portfolio. Increased investment in public goods and social infrastructure is an essential precursor to a less consumerist world. Enhanced public investment also sends a powerful signal about the balance between private interest and the common good. This same balance must be reflected in the politics of labour, says Jackson. The relentless pursuit of labour productivity growth is not necessarily averse to prosperity. But it can dramatically undermine both the quality of work and the resilience of key economic sectors.

Alternative strategies clearly exist. One of these is to protect and support those sectors which are employment rich – many of which are threatened by austerity, declining social investment and the dynamic of Baumol's cost disease. Such a transition would involve protecting the quality and intensity of people's time in the workplace against incursions from the aggressive cost-cutting behavior by the owners of capital.

This proposal is not a million miles from Minsky's suggestion that the government should act as "employer of the last resort" in stabilizing an unstable economy. As we've seen in the previous chapter, counter-cyclical public spending is, in general, a powerful tool for ensuring the stability of the post-growth economy.

Vital to government's ability to engage in this task is the nature of the monetary system itself. Increasing sovereign control over the money supply by removing (or reducing) the power of commercial banks to create money will have multiple advantages. Debt reduction improved financial stability and enhances social investment are the fruits of monetary reform.

Governance for prosperity

Bringing all these components together is an enormous but exciting challenge, says Professor Jackson. There are virtually no convincing precedents for a coherent and comprehensive vision of governance for the post-growth economy. But this new politics is neither the oppressive yoke of communism nor the evangelical laissez-faire of neoliberal market economics. It is a vital arena for improved political participation and renewed prosperity. The myth of the powerless, conflicted state has taken a powerful hold over the collective imagination. Governance itself has been narrowly framed by pernicious halftruths, peddled by vested interest. But the conflicted state is, in large part, a casualty of the growth dilemma. And in rescuing the economy from that dilemma stands a chance, at least, of rescuing itself.

This chapter sees a positive, dynamic role for a "progressive State". One that is attentive both to changing social conditions and to the underlying needs of its citizens. One that collaborates actively in the design of the good life. One that is inclusive and considerate. One that is entrepreneurial and innovative. The progressive state is dynamic, progressive and charismatic.

A prerequisite for its existence is freedom from the growth imperative, says Jackson. But the advantages to prosperity are legion. A more equal society will lower the importance of status goods. A less consumption-driven economy will reduce our impact on the planet. Enhanced investment in public goods will provide lasting returns to the common good. A less materialistic society will improve collective wellbeing.

In short, the progressive State is not just the instrumental for ensuring social and economic stability in a low-growth environment. It is the basis for a renewed vision of governance. It is the foundation for a lasting prosperity. In *Doughnut Economics: Seven ways to Think Like a 21st-Century Economist,* Kate Raworth's fifth chapter, Design to distribute, tackles the taboo subject of inequality.

She makes the point cogently in her opening summary: In the twentieth century, one simple curve – the Kuznets Curve – whispered a powerful message on inequality: it has to get worse before it can get better, and growth will (eventually) even it up. But inequality, it turns out, is not an economic necessity: it is a design failure. Twenty-first-century economists will recognize that there are many ways to design economies to be far more distributive of the value that they generate – an idea best represented as a network of flows. It means going beyond redistributing income to exploring ways of redistributing the wealth that lies in controlling land, enterprise, technology, and the power to create money.

If humanity is to thrive within the Doughnut, she says, every human being must have the capabilities needed to lead a life of dignity, opportunity and community. Yet as we know, many millions of people still lack the most basic means to do so. Where, then, do these people live?

Twenty years ago, the answer was easy to guess: almost all of them lived in the world's poorest countries, classified by the World Bank as low-income, with GDP per person of less than \$1,000 per year. As a result, tackling global poverty was seen to be a matter of channeling global aid transfers to provide basic public services and stimulate economic growth in these low-income countries. But today, the answer has changed and at first it seems counter-intuitive: three-quarters of the world's poorest people now live in middle-income countries. Not because they have moved but because their nations have become better off overall and so have been reclassified by the World Bank as middle income. Many of those countries, however – including the largest such as China, India, Indonesia and Nigeria – are becoming more unequal, which explains how they can simultaneously be home to most of the world's poorest people.

Wide inequalities lead to poverty in high-income countries too, Raworth says, where the gap between the rich and the poor is now at its highest level for 30 years, leaving a striking number of people short of their essential needs. In the US, for example, one child in five lives below the federal poverty line, while in the UK food banks have given out over one million packages of emergency food supplies each year since 2014.

For the first time, ending human deprivation is becoming as much a question of tackling national distribution as of international redistribution, argues Andy Sumner, the expert who crunched the data on where the world's poorest people live now. "A fundamental reframing of global poverty is increasingly national

distribution and thus national political economy", he writes, "and the core variable to explain global poverty is increasingly national distribution and thus national political economy". Of course, international redistribution from rich to poor countries continues to be essential for the 300 million people who live in poverty in countries still classified as low-income, which are mainly in sub-Saharan Africa. But the new geography of deprivation puts tackling national inequalities high on the agenda for ending poverty for all.

When the brilliant inventor of national income accounting, Simon Kuznets came up with a clever theory concerning inequality in the twentieth century, his underlying message - rising inequality is an inevitable stage on the journey towards economic success for all – was too good a story to doubt, says Kate Raworth. The image that Kuznets had already sketched in every economist's mind was soon drawn on to the economist's page and named: the Kuznets Curve: With income per person on the *x* axis and a measure of national income inequality on the *y* axis, the curve – shaped like an upside-down U – appeared to present an economic law of motion. And it whispered a powerful message: if you want progress, inequality is inevitable. It must get worse before it can get better, and growth will make it better.



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The inverted-U rapidly became an iconic diagram in the nascent field of development economics, where it bolstered the theory that poor countries should concentrate income in the hands of the wealthy since, only they would save and invest enough of it to kick-start GDP growth. In the blunt words of the founding theorist, W. Arthur Lewis, "development must be inegalitarian". In the 1970's both Kuznets and Lewis won the Nobel-Memorial prize for their respective theories on growth and inequality, while the World Bank treated the curve as an economic law and used it to publish projections of how long it would take for poverty levels to start falling in low-and middle-income countries.
Economists, meanwhile, kept searching for real-world examples to verify or not the validity of Kuznets theory, Says Raworth.

Striking regional events finally debunked the curve's erroneous law. The East Asian "Miracle" – from the mid 1960s to 1990 – saw countries such as Japan, South Korea, Indonesia and Malaysia combine rapid economic growth with low inequality and falling poverty rates. It was achieved largely thanks to rural land reform that boosted the incomes of smallholder farmers, coupled with strong public investments in health and education and industrial policies that raised workers' wages while restraining food prices. Far from being inevitable, the Kuznets process had turned out to be avoidable: it was indeed possible to achieve growth with equity. What's more, starting in the early 1980s, many highincome countries that believed they had successfully made it over the curve's hump saw their income distribution begin to widen again, resulting in the infamous rise of the one percent accompanied by flat or falling wages for the majority.

It was, however, the economist Thomas Piketty's 2014 long view of the dynamics of distribution under capitalism that made the underlying story plain to see, says Raworth. By asking not just who *earns* what but also who *owns* what, he distinguished between two kinds of households: those who own capital - such as land, housing, and financial assets which generate, rent, dividends, and interest - and those households that own only their labour, which generates only wages. He then scoured old tax records from Europe and the US to compare the growth trend of these different sources of income and concluded that Western economies - and others like them - are on track for dangerous levels of inequality. Why? Because the returns to capital have tended to grow faster than the economy generally leading wealth to become even more concentrated. That dynamic is then reinforced through political influence – from corporate lobbying to campaign financing – that further promotes the interests of the already wealthy. In Piketty's words, "Capitalism automatically generates arbitrary and unsustainable inequalities that radically undermine the meritocratic values on which democratic societies are based.

Societies can be deeply undermined by income inequality, says Raworth. When epidemiologists Richard Wilkinson and Kate Pickett studied a range of highincome countries in their 2009 book, *The Spirit Level*, they discovered that it is national inequality, not national wealth, that most influences nations' social welfare. More unequal countries they found, tend to have more teenage pregnancy, mental illness, drug use, obesity, prisoners, school dropouts, and community breakdown, along with lower life expectancy, lower status for women, and lower levels of trust. "The effects of inequality are not confined to the poor", they concluded, "inequality damages the fabric of the whole society". More equal societies, be they rich or poor, turn out to be healthier and happier.

Democracy, too, is jeopardized by inequality when it concentrates power in the hands of the few and unleashes a market in political influence, says Raworth. That is probably nowhere more evident than in the US, which by 2015 was home to more than 500 billionaires. "We are now seeing billionaires becoming much more active in trying to influence the election process", observes political analyst Darrell West, who studied the antics of his nation's richest citizens: "They're spending tens or hundreds of millions of dollars pursuing their own partisan interests, often in secret from the American public". The former vice-president Al Gore concurs. "American democracy has been hacked", he says, "and the hack is campaign finance".

Higher levels of national inequality, it turns out, also tend to go hand in hand with ecological degradation, says Raworth. Why so? In part because social inequality fuels status competition and conspicuous consumption, summed up in the only half-joking US bumper sticker, "He who dies with the most toys wins".

But also, because inequality erodes social capita – built on community connections, trust and norms – that underpins the collective action needed to demand, enact and enforce environmental legislation.

Economic stability, too, is jeopardized when resources become concentrated in too few hands, she says. That certainly became clear in the 2008 financial crisis. When the high-paid took on high risk assets that turned out to be the bundled debts of the low-paid taking on mortgages that they could not afford, the result was system fragility and financial crash. Michael Kumhof and Romain Ranciere, two economists at the World Bank, analysed the 25-year run-up to that crash and found it bore uncanny similarities to the decade long run-up to the Great Depression of 1929: both eras saw a large increase in the income share of the rich, a fast-growing financial sector, and a large increase in indebtedness of the rest of the population – culminating in financial and social crisis.

It is clear then, claims Raworth, that high income inequality entails many damaging effects. For low-income economies, these might once have seemed an unfortunate but necessary trade-off for the role that inequality was believed to play in generating faster economic growth – but that myth too has been debunked. Contrary to the founding theories of development economics, inequality does not make economies grow faster: if anything, it slows them down. And it does so by wasting the potential of the population: people who could be schoolteachers or market traders, nurses or micro-entrepreneurs – actively contributing to the wealth and wellbeing of their community – instead

need to spend their time desperately trying to meet their families' most basic daily needs. When the poorest families in society have no money to pay for their essential needs, the poorest workers in society can get no work in supplying them, and so the market stagnates among those who need its dynamism the most. Such intuitive reasoning is backed by analysis, explains Raworth.

Economists at the IMF have found strong evidence that, across a wide range of countries, inequality undercuts GDP growth. "More unequal societies have slower and more fragile economic growth", writes Jonathan Ostry, the lead economist behind the IMF study. "It would thus be a mistake to imagine that we can focus on economic growth and let inequality take care of itself". That is a powerfully important message, especially for policymakers in today's low-and middle-income countries, and one that clearly contradicts the myth of the Kuznets Curve.

With the Kuznets Curve debunked, and the damaging effects of inequality now starkly clear, a new mindset is emerging, says Kate Raworth. Its message is simple, she says: "Don't wait for economic growth to reduce inequality – because it won't. Instead, create an economy that is distributive by design."

Such an economy must help bring everyone above the Doughnut's social foundation, she continues. To do so, however, it must alter the distribution not only of income but also of wealth, time and power. A tall order? For sure. But many possibilities emerge if we set out with a systems-thinkers' mindset. A compelling starting place is to draw a new image, so what picture best encapsulates the principle of distributive design? Its essence is a distributed network whose many nodes, larger and smaller, are interconnected in a web of flows.

As the recurring success in nature's designs shows, networks are excellent structures for reliably distributing resources throughout a whole system. In order to better understand the kind of networks that can make us thrive, network theorists Sally Goerner, Bernard Lietaer and Robert Ulanowicz studied the branching patterns and resource flows in natures ecosystems. From the coldwater springs of Iowa to the alligator-filled wetlands of South Florida, they found that the answer lies – as it so often does – in structure and balance.

Natures networks are structured by branching fractals, ranging from a few larger ones to many medium-sizes ones and then myriad smaller ones, just like tributaries in a river delta, branches in a tree, blood vessels in a body, or veins in a leaf. Resources such as energy, matter and information can flow through these networks in ways that achieve a fine balance between the system's *efficiency* and its *resilience*.



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Efficiency occurs when a system streamlines and simplifies its resource flow to achieve its aims, say by channeling resources directly between the larger nodes. Resilience, however, depends upon diversity and redundancy in the network, which means that there are ample alternative connections and options in times of shock or change. Too much efficiency makes a system vulnerable (as global financial regulators realized too late in 2008) while too much resilience makes it stagnant: vitality and robustness lie in balance between the two.

What design principles can nature's thriving networks teach us for creating thriving economies? asks Kate Raworth. In two words: diversity and distribution, she says. If large-scale actors dominate an economic network by squeezing out the number and diversity of small and medium-sized players, the result will be a highly unequal and brittle economy. This certainly sounds familiar, given the current scale of corporate concentration across many industrial sectors, from agribusiness, pharmaceuticals and the media to the banks that are deemed too big to fail.

As Goerner and colleagues point out, the fragility generated by such concentration is reviving appreciation for the small, diverse enterprises that make up the bulk of an economy's network. "Because we have over-emphasized large-scale organisations, the best way to restore robustness today would be to revitalize our small-scale fair-enterprise root system", they conclude. "Economic development must become more focused on developing human, community and small-business capital because long-term, cross-scale vitality depends on these". The question then, is how to design economic networks so that they distribute value – from materials and energy to knowledge and income – in a far more equitable way.

Raworth thus turns her attention to redistributing income and redistributing wealth.

Redistributing income - and redistributing wealth

In the latter half of the twentieth century, policies aimed at national redistribution fell into three broad categories: progressive income taxes and tranfers; labour market protections such as a minimum wage; and providing public services such as health, education and social housing. Beginning in the 1980s, the authors of the neoliberal script pushed back on each one. Fierce debate arose over whether higher income taxes discouraged the high-paid from working more, and whether higher welfare payments trapped the low-paid into not working at all. Minimum wages and labour unions were portrayed not as protection for the poorest of workers but as a barrier to their employment. And the state's role in providing quality education, universal healthcare and affordable housing was depicted as an increasingly prohibitive public expense that simultaneously encouraged dependency.

Thanks to international public outrage over widening inequalities, ambition for greater redistribution has returned in the early twenty -first century, says Raworth. Many mainstream economists in high-income countries now advocate raising top marginal income tax rates along with higher tax rates on interest, rent and dividends. Social activists worldwide have put companies and governments under pressure to pay living wages; the Asia Wage Floor Alliance, for example, is demanding a living wage for garment workers across Asia. Others call for a maximum wage too, set within each company at around 20 to 50 times its lowest earner's wage, in order to curb excessive executive pay, and ensure that corporate profits are more equitably shared amongst the workforce. Some governments now offer guaranteed access to work, such as India's nationwide scheme that promises 100 days of minimum wage employment each year to every rural household that needs it. And citizens - from Australia and the USA to South Africa and Slovenia – are campaigning for a national basic income paid unconditionally to all, in order to ensure that, job or no job, every person has sufficient income to meet life's essentials.

Such redistributive policies can be life-changing for those who benefit from them. But they still may not get to the root of economic inequalities, because they focus on redistributing income, not the wealth that generates it. Tackling inequality at root calls for democratizing the ownership of wealth, argues the historian and economist Gar Alperovitz, because "political-economic systems are largely defined by the way property is owned and controlled". So, in addition to redistributing income, the economist's focus shifts towards redistributing sources of wealth too. Distributive design has an unprecedented opportunity this century to transform the dynamics of wealth ownership, says Kate Raworth. Five opportunities stand out, concerning who controls land, money creation, enterprise, technology and knowledge – and all five are explored below.

Some of these opportunities depend upon state-led reforms, and so must be seen as part of a long-term process of change. But others, crucially can be initiated by grass-roots movements and emerge bottom-up, so can start now. Of course, many have already started. And by transforming the underlying dynamics of wealth, these innovations are helping to turn today's divisive Economies into distributive ones, reducing both poverty and inequality in the process.

Who owns the land?

Redistributing land ownership has historically been one of the most direct ways to reduce national inequalities, as post-Second World War experience in countries like Japan and South Korea demonstrated. For people whose livelihoods and culture depended upon the land, secure land rights are essential. They enable farmers to take out loans, increase their crop yields, and build a secure future for their families and communities.

However, as populations and economies grow, the price of land rises, but no more of it can be supplied says Raworth, and so that shortage generates everhigher rent for landowners. Mark Twain had his eye on this trend in nineteenthcentury America: "Buy Land", he quipped. "They're not making any more of it". His contemporary Henry George was struck by the inequity inherent in this setup, which he witnessed firsthand on his travels around America in the 1870s.

But instead of encouraging his fellow citizens to buy land, he called on the state to tax it. On what ground? Because much of the land's value comes not from what is built on the plot but from nature's gift of water or minerals that may lie beneath its surface, or from the communally created value of its surroundings. In 1914, one of George's supporters, Fay Lewis, decided to make this point with what today would be called political performance art. He bought up an empty lot on a street in his hometown of Rockford, Illinois and left it derelict, erecting only a giant billboard to explain why. He even turned it into a postcard to spread the message far and wide.

George's proposal for a land-value tax – an annual levy on underlying land values as a fair means of generating public revenue – echoed John Stewart Mill's earlier call to tax "rentier landlords" who "grow richer, as it were in their sleep, without working, risking, or economizing". Inspired by such reasoning, land-value taxes are now in use – albeit in diluted from – from Denmark and Kenya to the US, Hong Kong and Australia. But taxation to George was essentially a substitute for a more systemic fix: land, he believed, should be owned in common by a community, rather than landowners. "The equal rights of all men to the use of land", he wrote, "is as clear as their equal right to breath the air". This view was a reaction against the long history of land enclosure, dating back to Henry V111's strategy of disbanding England's monasteries in the sixteenth century and selling off their land. Over the following two centuries, the new land-owning aristocracy fenced off the collectively grazed village commons to establish vast private estates, simultaneously creating a large class of landless workers who had to choose between ploughing their landlords' fields or heading to industrial centres to find waged work. In the blunt words of the 1960s historian, E. P. Thompson., "Enclosure was a plain enough case of class robbery".

That historic takeover of rural England is emblematic of the centuries-long global trend of both the state and the market encroaching on common land, first through colonization, then through corporate expansion, says Raworth.

Adam Smith's celebration of the self-organising market underpinned the justification that was later reinforced by Garrett Hardin'd claim that the commons are essentially tragic. But as we have seen previously, Elinor Ostrom challenged that belief when she started drawing attention to the equally powerful alternative of self-organising in the commons, and Hardin proved wrong. Gathering a rich array of case studies of "common-pool" resource users, from Southern India to Southern California, she and her colleagues analyzed how diverse communities had, sometimes for generations, successfully collaborated in harvesting, stewarding, and sustaining forests, fishing grounds and waterways.

Many of those communities, in fact, managed their land and its common-pool resources better than markets did, and better than comparable state-run schemes, says Raworth. In Nepal, where rice farmers face the challenge of ensuring that every farmer gets sufficient water for irrigation, Ostrom and her colleagues compared irrigation schemes constructed and operated by the state with ones that were built and run by farmers themselves. And they found that although the farmer-run irrigation schemes were more basic in build, they were kept in better repair, produced more rice, and distributed the available water more fairly among all their members. This self-organising system worked because the farmers developed their own rules for water use, met regularly in meetings and in the fields, set up monitoring systems, and sanctioned those who broke the rules. There are clearly many ways to share more equitably the wealth that lies beneath our feet, remarks Raworth. However, Elenor Ostrom was quick to point out, that there is no panacea for managing the land and its resources well: neither the market, the commons, nor the state alone can provide an infallible blueprint. Approaches to distributive land design must fit the people and the place and may well work best when they combine all three of these approaches to provisioning.

Who makes your money?

In most countries, says Raworth, the privilege of creating money has been handed to commercial banks, which create money every time they offer loans or credit. As a result, more money is made available only by their issuing more interest-bearing debt, and that debt is increasingly being channeled into activities - like buying houses, or stocks and shares. Investments such as these do not create new wealth that generates additional income with which to pay the interest, but instead earn a return simply by pushing up the price of existing assets. In the UK, for example, 97 percent of money is created by commercial banks and its character takes the form of debt-based interest-bearing loans. As for its intended use? In the ten years running up to the financial crash, over 75 percent of those loans were granted for buying stocks or houses – so fuelling the house-price bubble - while a mere 13 percent went to small businesses engaged in productive enterprise. When such debt increases, a growing share of a nation's income is syphoned off as payments to those with interest-earning investments and as profit for the banking sector, leaving less income available for spending on products and services made by people in the productive economy. "Just as landlords were the archetypal rentiers of their agricultural societies", writes economist Michael Hudson, "so investors, financiers and bankers are in the largest rentier sector of today's financialized economies.

Once the current design of money is spelled out this way – its creation, its character, and its use – it becomes clear that there are many options for redesigning it, involving the state and the commons along with the market. What's more, many kinds of money can coexist, with the potential to turn a monetary monoculture into a financial ecosystem.

Imagine, for starters, if central banks were to take back the power to create money says Raworth, and then issue it to commercial banks, while simultaneously requiring them to hold 100 percent reserves for the loans that they make – meaning that every loan would be backed by someone else's savings, or the bank's own capital. It would certainly separate the role of providing money from the role of providing credit, so helping to prevent the build-up of debt-fueled credit bubbles that burst with such deep social costs. That idea may sound outlandish, but it is neither a new nor fringe suggestion. First proposed during the 1930s Great Depression by influential economists of the day such as Irving Fisher and Milton Friedman, it obtained renewed support after the 2008 crash, gaining the backing of mainstream financial experts at the International Monetary Fund and Martin Wolf of the UK's *Financial Times*.

State-owned banks, could furthermore, use money from the central bank to channel substantial low- or zero-interest loans into investment for long-term transformation, such as affordable and carbon-neutral housing and public transport. It would give a crucial boost to building the transformative assets that every economy now needs and would shift power away from what Keynes called "the rentier... the functionless investor". Indeed, if the state intentionally kept interest rates very low, he argued:

"It would mean the euthanasia of the rentier, and consequently, the euthanasia of the cumulative oppressive power of the capitalist to exploit the scarcity-value of capital. Interest today rewards no genuine sacrifice, any more than does the rent of land. The owner of land can obtain rent because land is scarce."

States could also transform the distributive impact of monetary policy measures used during recessions, says Raworth. In mild recessions, central banks normally seek to boost the money supply by cutting interest rates in order to stimulate commercial bank lending and hence money creation. In deep recessions, however, once interest rates have already been cut very low, central banks attempt to further boost the money supply by buying back government bonds from commercial banks – a practice known as quantitative easing, or QE – in the hope that the banks will then seek to invest the extra money in expanding productive businesses. But as post-financial-crash experience demonstrated, commercial banks used that extra money to rebuild their own balance sheets instead, buying speculative financial assets like commodities and shares. As a result, the price of commodities such as grain and metals rose, along with the price of fixed assets like land and housing, but new investments in productive businesses didn't.

What if, instead, central banks tackled such deep recessions by issuing new money directly to every household as windfall cash to be used specifically for paying down debts – an idea that has come to be known as "People's QE". Rather than inflating the price of bonds, which tends to benefit wealthy asset owners, this approach – which resembles a one-off rebate for all – would benefit indebted households. Additionally, suggests the tax expert Richard Murphy, central banks could channel new money into national investment banks for "green" and social

infrastructural projects, such as community-based renewable energy systems, as part of the long-term infrastructural transformation that is urgently needed – an idea now known as "Green QE'.

Such ideas for state-led monetary redesign at first seem radical, but they are increasingly looking feasible. And at the same time as promoting greater economic stability, they would promote greater equality, tending to favour the low-income and indebted rather than favouring banks and asset owners.

Monetary redesign is under way in the commons too, says Raworth, with diverse communities creating their own complementary currencies to be used alongside a nation's official currency. "Whenever there are unmet needs and spare resources", explains financial economist Tony Greenham, "we can find new ways of creating money". Issued from within their community of users, these currencies are sometimes paper, sometimes electronic, and are usually interest-free. Whether their use is intended to boost the local economy, empower marginalized communities, or reward work that is traditionally unpaid, such currency schemes are thriving, creating more resilient and more equitable local monetary ecosystems.

Take Bangladesh – not the country, but the sprawling slum district on the outskirts of Mombasa, Kenya, where money is tight and business is highly volatile, leaving many families frequently short of cash for life's essentials. In 2013, Bangla Pesa was launched as a complimentary currency for use by small business within that community. The government's first response? To arrest the schemes founder, Will Ruddick, an American community development worker, along with five of the currencies first users, for fear that its paper vouchers were aiming to oust the official Kenya Shilling. But once government officials understood that Bangla Pesa was developed to compliment, not compete with, Kenyan Shillings, they released the group and instead began supporting them in spreading the scheme.

Over 200 traders, most of them women – from bakers and fruit sellers to carpenters and tailors – are now members of the network. Every new member must be endorsed by four others before being issued with Bangla vouchers, which they must commit to back with their own goods and services – thus ensuring that the scheme is underwritten by its own members. Within two years of the scheme's launch, traders' total revenues had increased substantially, in good part thanks to the economic stability and liquidity provided by the scheme.

Using Bangla vouchers to buy and sell within the network allows members to keep their Kenyan Shillings to pay for essentials like electricity that demands hard cash. Furthermore, the complimentary currency provides a buffer against the frequent slumps in cash spending in the community. When a three-day power cut hit the district in 2014, small businesses like John Wacharia's barber shop lost customers and cash revenue. But as a member of the network, he had an alternative means of exchange at hand. "Bangla Pesa allowed me to provide for my family, eat, and survive when I could no longer work", he said.

Complementary currencies can clearly enrich and empower communities, but game-changing ones are now emerging, thanks to the invention of blockchain, says Raworth. Combining database and network technologies, Blockchain is a digital peer-to-peer decentralized platform for tracking all kinds of value exchanged between people. Its name derives from the blocks of data – each one a snapshot of all transactions that have just been made in the network – which are linked together to create a chain of data blocks, adding up to a minute-by-minute record of the network's activity. And since that record is stored on every computer in the network, it acts as a public ledger that cannot be altered, corrupted or deleted, making it a highly secure digital backbone for the future of e-commerce and transparent governance.

One fast-rising digital currency that uses blockchain technology is Ethereum, which, among its many possible applications, is enabling electricity microgrids to set up peer-to-peer trading in renewable energy, says Raworth. These microgrids allow every nearby house, office or institution with a smart meter, internet connection, and solar panel on the roof to hook in and sell or buy surplus electrons as they are generated, all automatically recorded in units of digital currency. Such decentralized networks – ranging from a neighbourhood block to a whole city - build community resilience against blackouts and cut long-distance energy transmission losses at the same time. What's more, the information embedded in every Ethereum transaction allows network members to put their values into action in the microgrid market, for example by opting to buy electricity from the nearest or greenest suppliers, or from those that are community-owned or not-for-profit. "Ethereum is a currency for the modern age", says the cryptocurrency expert David Seaman. "It's a platform that could be really important to society down the road in ways that we can't even predict vet".

These very different examples illustrate a few of the myriad possibilities of monetary redesign, involving the market, the state and the commons, says Raworth. But each one makes clear that the way that money is designed – its creation, its character, and its intended use – has far-reaching distributional implications. Recognising this invites us to escape the monoculture of money and put the potential of distributive design at the heart of a new financial ecosystem.

Who owns your labour?

Stagnant wages have become a familiar story, remarks Raworth. Over the past three decades, most workers across the high-income countries have seen their wages barely increase, flatlining, or even fall while executive pay has ballooned.

In the UK, GDP has grown far faster than the average worker's wages since 1980, and the wage gap has widened too, resulting in the average worker earning 25 percent less than they otherwise would have done by 2010. In the US, the years 2002 to 2012 have been dubbed "the lost decade for wages": while the economy's productivity grew by 30 percent, wages for the bottom 70 percent of workers were stagnant or in decline. Even in Germany – where trade unions have far greater influence over industrial policy – the share of wages in national output fell from 61 percent of GDP in 2001 to just 55 percent by 2007, its lowest level in five decades. Indeed, across all high-income countries, while workers' productivity grew by over 5 percent from 2009 to 2013, their wages rose by just 0.4 percent.

At the heart of this inequity lies a simple design question states Raworth: who owns the enterprise, and so captures the value that workers generate? When the founding fathers of economics disagreed over how income would be distributed between labour, landlords and capitalists, they could all agree on one thing: that these were obviously three distinct groups of people. During the industrial revolution – when industrialists issued shares to wealthy investors while hiring penniless workers at the factory gate – that was a fair assumption. But what determined each group's respective share of earnings? Economic theory says it is their relative productivity, but in practice it has largely turned out to be their relative power. The rise of shareholder capitalism entrenched the culture of shareholder primacy, with the belief that a company's primary obligation is to maximize returns for those who own its shares.

There's a deep irony to this model, says Raworth. Employees who turn up for work, day-in, day-out are essentially cast as outsiders: a production cost to be minimized, an input to be hired and fired as profitability requires. Shareholders, meanwhile, who probably never set foot on the company premises, are treated as the ultimate insiders: their narrow interest of maximizing profits come before all. No wonder that, under this set-up, the average worker has been losing out, especially since trade unions in many countries were stripped of their bargaining power from the 1980s onwards.

But this set-up is, of course, just one among many possible enterprise designs, says Raworth. It happens to have dominated the nineteenth and twentieth centuries but that doesn't mean it has to dominate the twenty-first. The analyst Marjorie Kelly has dedicated her career to understanding the effects of enterprise designs, ranging from Fortune 500 corporations to local not-forprofits. For enterprise to be inherently distributive of the value it creates, she argues, two design principles are particularly key: *rooted membership* and *stakeholder finance*, and together they flip the dominant ownership model on its head. Imagine if labour ceased to be the expendable outsider and became, instead the ultimate insider, rooted in employee-owned firms. Imagine, too, if those enterprises raised finance, not by issuing shares to outside investors but by issuing bonds, promising their stakeholder- investors not a slice of ownership but a fair fixed return. No need to imagine, of course: such enterprises are growing fast.

Employee-owned companies and member-owned cooperatives have long been a cornerstone of distributive enterprise design, born out of the cooperative movement that took off in the mid nineteenth-century England, offering its members better pay, greater job security, and a say in managing the business. It is a model that thrives today, from the Evergreen Cooperatives running greenhouses, laundries and solar installation services in Cleverland, Ohio to the Mamsera Rural Cooperative in Rombo, Tanzania, whose members grow high-quality coffee and manage tree nurseries. They are both part of a growing force: in 2012 the 300 largest cooperatives worldwide, covering agriculture, retail, insurance, and healthcare, generated \$2.2 trillion in revenue – equivalent to the world's seventh largest economy. In the UK, the John Lewis Partnership, a leading retailer for almost a century, has over 90,000 permanent staff named as partners in the business. In 2011 the company raised \$50 million in capital by inviting employees and customers to purchase five-year bonds in return for an annual 4.5 percent dividend plus two percent in shop vouchers.

Other new business designs are now joining this long-established model to create a veritable ecosystem of enterprises. It is happening, in good part, thanks to innovative entrepreneurs and lawyers teaming up to write new kinds of corporate charters and company articles of association, which are effectively a company's user manual, setting out its objectives, structure, and employee or member's rights and duties. Redesign that and you've redesigned the DNA of business. From not-for-profits to community interest companies, the bottom-up experiment in business redesign is giving rise to a network of enterprise alternatives operating alongside the old-style corporate mainstream. "What's underway is an ownership revolution", says Todd Johnson, one of the innovative US lawyers rewriting corporate charters. "It's about broadening economic power from the few to the many and about changing the mindset from social indifference to social benefit. These are the foundations of a dynamic and inspiring movement, but critics point out that mainstream corporate practice, driven by shareholder primacy, still dominates. "Ultimately we will need to change the operating system at the heart of major corporations", Kelly acknowledges. "But if we begin there, we will fail. The place to begin is with

what's doable, what's enlivening – and what points towards bigger wins in the future".

Who will own the robots?

Next Raworth turns her attention to technology.

"The digital revolution is far more significant than the invention of writing or even printing", said Douglas Engelbart, the acclaimed American innovator in human-computer interaction. He might well turn out to be right, says Raworth. But the significance of this revolution for work, wages and health hinges on how digital technologies are owned and used. So far, they have generated two opposing trends whose implications are only just beginning to unfold.

First, the digital revolution has given rise to the network era of near zeromarginal-cost collaboration. It is essentially unleashing a revolution in distributed capital ownership. Anyone with an internet connection can entertain, inform, learn and teach worldwide. Every household, school or business rooftop can generate renewable energy and, if enabled by a blockchain currency, can sell the surplus in a microgrid. With access to a 3D printer, anyone can download designs or create their own and print-to-order the very tool or gadget they need.

Such lateral technologies are the essence of distributive design, and they blur the divide between producers and consumers, allowing everyone to become a prosumer, both a maker and user in the peer-to-peer economy.

So far, so empowering, says Raworth. But a parallel process of winner-takes-all dynamics is also in play. Instead of promoting diversity of web-based enterprises and information providers, the Internet's strong network effects (with everyone wanting to be on the networks that everyone else is on) have transformed individual providers – like Google, YouTube, Apple, Facebook. eBay, Paypal, and Amazon – into digital monopolies that sit at the heart of the network society.

They are now effectively running the global social commons in the interests of their own commercial ventures, while aggressively arming themselves with patents to guard that privilege. The global governance to regulate these divisive dynamics is still sorely lacking yet is clearly going to be essential in order to reverse this rapid enclosure of the twenty-first century's most creative commons.

Alongside this, the digital revolution has brought a second trend of concentration, says Raworth. Just as it is empowering people with near zero-marginal-cost production, it is displacing people with near zero-humans-required production. Thanks to the rise of robots – machines that can mimic and

outperform humans – many millions of jobs are at risk. What jobs exactly? Anyone with a role involving tasks, skilled or not, that a programmer could write software to perform, from warehouse stackers, car welders and travel agents to taxi drivers, paralegal clerks and heart surgeons. This wave of digital automation is still in its infancy, but it has already led to what the digital economy expert Erik Brynjolfsson has called the "the great decoupling" of production from jobs, seen most clearly in the United States. From the end of the Second World War until 2000, US productivity and employment were closely intertwined, but they have strongly diverged ever since: while productivity has kept on rising employment levels have fallen flat.

Economic analysts worry that today's robot replacements are cutting across so many industrial and service sectors so fast that job creation in other fields simply cannot keep up, says Raworth. Millions of mid-skill jobs lost in the recession of 2007 to 2009 have not come back because they have been replaced by software. Meanwhile, the jobs that have returned post-recession are typically menial, creating an hourglass economy that offers a few high-skill and many low-skill jobs with little in between. Analysts predict that five million jobs across 15 major economies could well be lost to automation by 2020. And it is a worldwide trend, with the fastest-growing market for robots in China. There, the electronics giant Foxconnn, which employs around a million workers, plans to create a "million robot army" and has already replaced 60,000 workers with robots in one factory alone.

So how could distributive design help to prevent the economic segregation that technology appears to be driving? Asks Raworth. An obvious starting point is to switch from taxing labour to taxing the use of non-renewable resources: it would help to erode the unfair tax advantage currently given to firms investing in machines (a tax-deductible expense) rather than in human beings (a payroll tax expense). At the same time, invest far more in skilling people up where they beat robots hands-down: in creativity, empathy, insight and human contact – skills that are essential for many kinds of work, from primary school teachers and artistic directors to psychotherapists, social workers and political commentators. As Erik Brynjolfsson and his co-author Andrew McAfee put it, "Humans have economic wants that can only be satisfied by other humans".

That's reassuring, says Raworth, but only partly, because if most workers continue to earn income just from selling their labour alone, they will fail to capture a big enough slice of the economic pie to ensure that everyone gets some of it, let alone a fair share of it. The future returns to paid employment are on track to create a deeply split labour market with vast inequalities –a prospect that strongly reinforces the rationale behind the many national campaigns demanding a basic income for all.

Human-niche work for some and a guaranteed income for all would make a smart start to handling the rise of the robots, says Raworth, but it would leave low-wage workers and the workless forever lobbying to maintain such high levels of redistribution year on year. Far more secure is for every person to have a stake in owning the robot technology and providing a "robot dividend". But thanks to current tax loopholes and a culture of privatized returns, many nations (including the US) currently earn surprisingly little direct revenue from the multibillion-dollar digital economy, despite having invested substantial public money in the research, development and infrastructure underpinning it. That needs to change, argues the economist Mariana Mazzucato: when the state takes a risk, it deserves a return, which could be collected through royalties from coowned public-private patents, or through state banks owning significant equity in businesses that use robot technologies based on publicly funded research.

Given the extreme disruption to work and hence incomes that is anticipated by the rise of the robots, more such innovative proposals are needed to ensure that the wealth generated by their productivity is widely distributed. That said, it is also time to look beyond the traditional binary choice of market versus state when it comes to controlling technology. Turn instead to the innovation taking place in the collaborative commons, which have the potential to transform the control of knowledge

Who owns the ideas?

The international regime of intellectual property rights has significantly shaped the control and distribution of knowledge for hundreds of years. It's a story that began innocently enough in the fifteenth century, when Venice started awarding its famed glass-blowers10-year patents to protect their novel creations from imitators.

The rise of patents, followed by copyright and trademarks, created intellectual property regimes that initially spurred on the industrial revolution but then began colonizing the commons of traditional knowledge, with a growing number of patents seeking to monopolise know-how that had been collectively developed. With great irony, the intensive overuse and abuse of intellectual property law today is widely acknowledged to be stifling the very innovation it was intended to promote. Patents now last 20 years and are granted for a wide array of spurious inventions – ranging from Amazon's US patent on "one click" purchasing to the medical firm Myriad Genetics' patent on cancer-related genes.

And in many high-tech industries patents are frequently acquired tactically with the specific aims of blocking or suing competitors. "We have designed an expensive and unfair intellectual property regime", writes economist Joseph Stiglitz, "that works more to the advantage of patent lawyers and large corporations than to the advancement of science and small innovators".

Mainstream economic theory claims that without intellectual property protection, innovators lack the incentive to bring new products to market because they cannot recoup their costs, says Raworth. But in the collaborative commons, millions of innovators are defying this received wisdom, co-creating and using free open-source software, or FOSH. It's a spirit embodied by Narcin Jacubowski, physicist and Missourian farmer, who – frustrated by the extortionate cost of farm machinery that kept breaking down - decided to build his own, while sharing his ever-improving designs for free. His idea soon grew into the Global Village Construction Set, which aims to demonstrate step-by-step how to build from scratch 50 universally useful machines, from tractors, brick makers and 3D printers to sawmills, bread ovens and wind turbines. The designs have so far been recreated by innovators in India, China, the US, Canada, Guatemala, Nicaragua, Italy and France. Based on these successes, Jakubowski and his collaborators have since launched the Open Building Institute, which aims to make open-source designs for ecological, off-grid, affordable housing available to all. "Our goal is decentralized production", he explains. "I'm talking about a business case for efficient enterprise where the traditional concept of scale becomes irrelevant. Our new concept of scale is about distributing economic power far and wide".

Obviously, the digital revolution has unleashed an era of collaborative knowledge creation that has the potential to radically decentralize the ownership of wealth, says Raworth. But, argues the commons theorist Michael Bauwens, it is unlikely to reach its potential without state support. Just as corporate capitalism has long depended on the backing of government policies, public funding and pro-business legislation, so now the commons need the backing of a Partner State whose aim is to enable the creation of common value. How can the state start helping the knowledge commons to realize its potential? In five ways, says Raworth:

First, invest in human ingenuity by teaching social entrepreneurship, problemsolving and collaboration in schools and universities worldwide: such skills will equip the next generation to innovate in open-source networks like no generation before them. Second, ensure that all publicly funded research becomes public knowledge, by contractually requiring it to be licensed in the knowledge commons, rather than permitting it to be locked away under patents and copywrite for private commercial gain. Third, roll back the excessive reach of corporate intellectual property claims in order to prevent spurious patent and copyright applications from encroaching on the knowledge commons. Fourth, publicly fund the set-up of community makerspaces – places where innovators can meet and experiment with shared use of 3D printers and essential tools for hardware construction. And lastly, encourage the spread of civic organizations – from cooperative societies and student groups to innovation clubs and neighbourhood associations – because their interconnections turn into the very nodes that bring such peer-to-peer networks alive.

Going global

Despite the importance of tackling national inequalities, Raworth says, global inequalities are still of great concern. Since 2000, global income inequality has narrowed slightly – largely thanks to poverty reduction in China – but the world still remains more unequal than any single country within it and that extreme skew in global incomes helps to push humanity beyond both sides of the Doughnut. For several centuries we have been encouraged to identify ourselves foremost as nations, each one with its own economy, looking over the border or across the water at "others". If we take the inevitable twenty-first century step and each consider ourselves as part of a global community too, connected in a multi-layered but interdependent economy, what possibilities for global redistributive design might emerge?

The traditional tool for international redistribution has been overseas development assistance, ODA, but the history of its rich to poor transfers is nothing short of a myopic failure in global action. In a 1970 UN resolution, high-income counties pledged to contribute 0.7 percent of their annual income to ODA, and to do so by 1980 at the latest. But by 2013 – over 30 years beyond the deadline – the total stood at just 0.3 percent, less than half of what was promised each year. Well spent, that missing finance could have delivered of progress in maternal health, child nutrition, and girl's education in the world's poorest communities: it would have empowered women, transformed livelihoods, boosted national prosperity, and helped to stabilize the global population at the same time.

Where high-income countries have broken their promise of financial redistribution, global migrants have stepped in, says Raworth. Out of their earnings, the remittances they send to their families back home are now the single largest source of external finance in many low-income countries, outstripping both ODA and foreign direct investment. Those worker remittances constitute about 25 percent of GDP in countries like Nepal, Lesotho and Moldova, and are a vital source of resilience during domestic economic and humanitarian crises. That makes migration one of the most effective ways of reducing global income inequality. But its long-term success hinges on preventing wide income inequalities within the host countries themselves, and on building community connections and social capital. Without these, local communities that have been

left behind economically often resort to blaming immigrants, instead of welcoming the diversity and dynamism that their presence can bring. High-income countries have often justified their meager record on ODA by arguing that, rather than being well spent, too much aid gets embezzled by corrupt leaders or wasted on poorly designed projects, says Raworth. Rigorous evaluations show that much overseas aid is in fact highly effective in tackling poverty, but there is no denying that it is sometimes abused. What if, then a portion of that promised ODA were channeled directly to people living in poverty in those countries instead? It would act as a basic income, giving every person access to the market as a means of providing for their needs. What's more, for the first time in history such a scheme could work, thanks to the rapid worldwide spread of mobile phones and the proven success of mobile banking.

Kenya has been a trailblazer in mobile banking since launching its M-PESA mobile money service in 2007, says Raworth. Within six years, three-quarters of all Kenyan adults had used the service, including 70 percent of those in rural areas, and – astonishingly – over 40 percent of Kenya's GDP was passing through M-PESA. Worldwide, 5.5 billion people are expected to be using mobile phones by 2018, and mobile banking will come as part of that package. In essence, it will soon be feasible to create a phone book of the world's "bottom billion" and text digital cash directly to them. Contrary to concerns that a guaranteed basic income would make people lazy or even reckless, cross-country studies of cash transfer schemes show no such effect: if anything, people tend to work harder and seize more opportunities when they know they have a secure fallback. When it comes to delivering a basic income to the world's poorest, the question is no longer "how on Earth?" but "why on Earth not?"

The biggest and longest experiment in piloting such a scheme is getting underway in Kenya, set up by the US-based charity GiveDirectly. For the next 10-15 years, 6,000 of the poorest people in Kenya will regularly receive a guaranteed income that is enough to meet a family's basic needs, sent via their phone. By running such an extended pilot scheme, the charity hopes to give recipients the security needed to take longer-term life-changing decisions – and to prove that a universal basic income is an idea whose time has come. There's only one caution: that private incomes are no substitute for public services. The market works best in tackling inequality and poverty when it complements, rather than replaces the state and the commons. Accompanied by free-at-thepoint-of-use provision of education and primary healthcare, such a basic income would be a direct investment in the potential of every woman, man and child, significantly advancing the prospects of achieving the Doughnut's social foundation for all. How could additional funds – on top of 0.7 percent ODA – be raised in the spirit of global redistribution? Asks Raworth. Through a global tax on extreme personal wealth, for starters. There are now more than 2,000 billionaires living in 20 countries from the USA, China and Russia to Turkey, Thailand and Indonesia. An annual wealth tax levied at just 1.5 percent of their net worth would raise \$74 billion each year: that alone would be enough to fill the funding gap to get every child into school and deliver essential health services in all lowincome countries. Match that with a global corporate tax system that treats multinational corporations as single, unified firms, and closes tax loopholes and tax havens, so boosting public revenue for public purposes worldwide. Supplement these with taxes on destabilizing and damaging industries, such as a global financial transaction tax to curb speculative trading, and a global carbon tax levied on all oil, coal and gas production. Yes, some of these tax proposals sound unfeasible now, but so many once-unfeasible ideas – abolishing slavery, gaining the vote for women, ending apartheid, securing gay rights – turn out to be inevitable. In the century of the planetary household, global taxes will do.

If universal access to markets is to become a twenty-first-century norm, along with universal access to public services, then so too should all-embracing access to the global commons, says Kate Raworth – particularly to Earth's life-giving systems and to and to the global knowledge commons.

Given what we now understand about planetary boundaries, the integrity of the living world is clearly and profoundly in the common interest of all: clean air and clean water, a stable climate, and thriving biodiversity are among the most important "common pool" resources for all of humanity. "The great task of the twenty-first century", writes the ecological thinker Peter Barnes, "is to build a new and vital commons sector that can resist enclosure and externalization by the market, protect the planet, and share the fruits of our common inheritances more equitably than is now the case". One way of achieving this, he proposes, is to create an array of Commons Trusts, each one endowed with property rights enabling it to protect and steward a particular realm of Earth's commons - be it a local watershed or the global atmosphere - to the benefit of all citizens and future generations. In order to keep the use of these commons within local or planetary ecological boundaries, each trust would cap overall use and charge its users – such as companies extracting water from aquifers or offloading greenhouse gases into the sky – and share the benefit widely. Some national trusts like these already exist but it will be a challenge to design global-scale ones given the vast inequalities between rich and poor people and countries:

who would be prepared to pay, who would share in the benefits, and how could hihistoric ecological debts be repaid? These tough issues are the very governance questions to take on once we recognize Earth's life-giving systems as humanity's common heritage.

Rather than wait (in vain) for growth to deliver greater equality, twenty-first – century economists will design distributive flow into the very structure of economic interactions from the get-go. Instead of focusing on redistributing income alone, they will also seek to redistribute wealth – be it the power to control land, money creation, enterprise, technology or knowledge - and will harness the market, the commons and the state alike to make it happen. Rather than wait for top-down reform, they will work with bottom-up networks that are already driving a revolution in redistribution.

Facing up to the degenerative linear economy

Kate Raworth suggests that it is time to put aside the search for economic laws demonstrating that growing national output will eventually deliver ecological health. Whatever the arguments about economic growth and pollution says Raworth, economics is essentially a question of design. And the reason why even the world's richest countries are still making us all feel the burn is because the last two hundred years of industrial activity have been based upon a linear industrial system whose design is inherently degenerative. The essence of that industrial system is the cradle-to-grave manufacturing supply chain of take, make, use, lose. extract Earth's minerals, metals, biomass and fossil fuels; manufacture it into products; sell them on to consumers who – probably sooner rather than later – will throw them "away". When drawn in its simplest form, it looks like an industrial caterpillar, ingesting food at one end, chewing it through, and excreting the waste out the other end.



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This ubiquitous industrial model has delivered strong profits to many businesses and has financially enriched many nations in the process. But its design is fundamentally flawed because it runs counter to the living world, which thrives by continually recycling life's building blocks such as carbon, oxygen, water, nitrogen and phosphorus. Industrial activity has broken these natural cycles apart, depleting nature's sources and dumping too much waste in her sinks. Extracting oil, coal and gas from under land and sea, burning them, and dumping carbon dioxide in the atmosphere. Turning nitrogen and phosphorus into fertilizer, then offloading the effluent – from agricultural run-off and sewage – into lakes and oceans. Uprooting forests to mine minerals and metals which, once packed into consumer gadgets will be cast onto e-waste dumpsites, with toxic chemicals leaching out into the soil, water and air.

Economic theory recognizes the potentially damaging effects - the "negative externalities" – of such industry and has its favoured market-based tools for addressing them: quotas and taxes. To internalize those externalities, the theory advises, put a cap on total pollution, assign property rights with quotas, and allow market trading to put a price on the right to pollute. Or impose a tax equivalent to the "social cost" of pollution, and then let the market decide how much pollution it is worth emitting.

Such policies can have significant effect, says Raworth. From 1999 to 2003, Germany's eco-tax raised the price of fossil fuels used for transport, heating and electricity, while lowering payroll taxes by an equivalent amount: it cut fuel consumption by 17 percent and carbon emissions by three percent, increased car sharing by 70 percent, and created 250, 000 jobs. California's carbon cap- and –trade scheme, launched in 2013, aims to bring the state's greenhouse gas emissions back to 1990 levels by 2020. It still gives industry most of the quota for free but intends to reduce the total quota and auction more of those permits over time, while using a floor price to avoid the collapse of permit prices, as occurred in Europe's equivalent carbon-trading scheme.

Tiered pricing is growing in use too, says Raworth, ensuring that the more that people use, the more they pay. From Santa Fe, California to water-stressed cities across China, tiered pricing is used to ration water use between households of widely differing incomes. Every household pays a low rate for its initial daily supply, intended for essentials such as drinking, bathing, and washing dishes and clothes. Beyond that whether it is for cleaning cars, irrigating lawns or filling swimming pools - further water use is charged at much higher rates. As water market expert Roger Glennon explains, "The beauty of tiered pricing is that it doesn't prevent people from using water, and it doesn't rely on government regulations. But it insists you pay more for extra water for your lawn than for basic human needs". In Durban, South Africa, where access to water is recognized as a constitutional human right, each day's essential supply is provided free to all low-income households, with pricing only kicking in beyond that level.

Taxes, quotas and tiered pricing can clearly help to ease humanity's pressure on the Earth, says Raworth. But here's the trouble with believing that they will do the whole job. In practice they fall short because they are rarely set at the level required: corporations lobby hard to delay their introduction, to lower the tax rate, to increase the quota, and to get permits given for free, not auctioned. Governments, in return, too often concede, fearing that their nation will lose competitiveness – and that their political parties will lose corporate backing. These policies fall short in theory too: from a

systems-thinking perspective, quotas and taxes to limit the stock and reduce the flow of pollution are indeed leverage points for changing a system's behavior – but they are low points of leverage. Far greater leverage comes from changing the paradigm that gives rise to the system's goals.

When industry is based upon the degenerative linear design of take-make-use-lose, there is only so much that price incentives can do to mitigate its depleting effects. The visionary landscape architect John Tillman Lyle clearly recognized the limits inherent in such design. "Eventually a one-way system destroys the landscapes on which it depends", he wrote in the 1990s. "The clock is always running and the flows always approaching the time when they can flow no more. In its essence, this is a degenerative system, devouring the sources of its own sustenance". What's needed in its place is a paradigm of regenerative design – and that paradigm is now emerging, giving rise to a fascinating spectrum of business responses.

Can we do business in the Doughnut?

When companies first become aware of the scale of pressure that degenerative design puts on Earth's planetary boundaries, what do they do, asks Kate Raworth?

The first and oldest response is simple: *do nothing.* Why change our business, they reason, when it is delivering strong returns today? Our responsibility is to maximize our profits...But things are changing fast, and many producers realize that their own product supply chains are now vulnerable, so doing nothing is no longer a smart option. That's why the next-step response has become the most common, says Raworth: *do what pays,* by adopting eco-efficiency measures that cut costs, or boosts the brand. The third response – getting more serious now says Raworth – is to *do our fair share* in making the switch to sustainability. To their credit, companies taking this approach at least start by acknowledging the scale of change needed based on, say the total reduction of greenhouse gas emissions, fertilizer use, or water withdrawals that is recommended by Earth-system scientists. However, as anyone knows who has ever been left holding the restaurant bill once their fellow diners have chipped in what they think is their fair share, it almost never adds up. Self-determined fair shares never quite get the job done – as the world's governments have demonstrated with their woefully inadequate, nationally determined pledges to cut their greenhouse gas emissions.

The fourth response – and it is a true step-change in outlook - is to *do no harm*, an ambition that is also known as "mission zero": designing products, services, buildings and businesses that aim for zero environmental impact, says Raworth. Examples aspiring to that goal include zero-energy buildings like the Bullitt Centre in Seattle which (despite that city's reputation for relentless rain) uses solar panels to generate as much energy as it uses each year.

Aiming for net-zero impact is a truly impressive departure from the business-as-usual of degenerative industrial design, says Raworth, and it is more impressive still if the aim is net zero not just in energy or water but in all resource-related aspects of a company's operation – a still far off goal. It is also a sign of profound efficiency in resource use but, as the architect and designer William McDonough has put it, the avid pursuit of resource

efficiency is simply not enough. "Being less bad is not being good", he says. "It is being bad, just less so".

And once you think about it, says Raworth, pursuing mission zero is an odd vision for an industrial revolution, as if intentionally stopping on the threshold of something far more transformative. After all, if your factory can produce as much energy and water as it uses, why not see if it can produce more? If it can eliminate all toxic materials from your production process, why not introduce health-enhancing ones in their place? Instead of aiming merely to "do less bad", industrial design can aim to "do better" by continually replenishing, rather than more slowly depleting, the living world. Why simply take nothing when you could also give something?

That's the essence of the fifth business response: *be generous* by creating an enterprise that is regenerative by design, giving back to the living systems of which we are a part, says Kate Raworth. More than an action-on-a-to-do checklist, it is a way of being in the world that embraces biosphere stewardship and recognizes that we have a responsibility to leave the living world in a better state than we found it. It calls for creating enterprises whose core business helps to reconnect nature's cycles, and that gift as much as they can – because only generous design can bring us back below the Doughnut's ecological ceiling. For Janine Benyus, a leading thinker and doer in the field of biomimicry this notion of generosity has become the design mission of a lifetime.

To discover the essence of generous design, she suggests that we take nature as our model, measure and mentor. With nature as *model*, we can study and mimic life's cyclical processes of take and give, death and renewal, in which one creatures waste becomes another's food. As *measure*, nature sets the ecological standard by which to judge the sustainability of our own innovations: do they measure up and fit in by participating in natural cycles? And with nature as *mentor*, we ask not what we can extract, but what we can learn from its 3.8 billion years of experimentation.

The circular economy takes flight

Industrial manufacturing has begun the metamorphosis from degenerative to regenerative design through what has come to be known as the "circular economy", says Raworth. It is regenerative by design because it harnesses the endless inflow of the sun's energy to continually transform materials into useful products and services. So bid farewell to the linear industrial economy's caterpillar as, before your eyes it turns into a butterfly, in a diagram based on one created by the Ellen MacArthur Foundation. And, just as with real butterflies, the brilliance lies in the wings



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What are the design features that enable this industrial butterfly to take flight? First focus in on the cradle-to grave mentality of the linear economy that incited the twentieth century's voracious mining for minerals, drilling for oil, and burning of waste.

That caterpillar, the throwaway economy of take-make-use-lose still flows from top to bottom through the centre of the diagram, says Raworth. But watch as it turns into the butterfly, thanks to cradle-to-cradle thinking in the circular economy. It runs on renewable energy – from solar, wind Wave, biomass and geothermal sources – eliminating all toxic chemicals and, crucially eradicating waste by design. It does so by recognizing that waste equals food: instead of heading for landfill, the leftovers from one production process – be they food scraps or scrap metal – become the source materials for the next. The key to making this work is to think of all materials as belonging to one of two nutrient cycles: *biological* nutrients such as soil, plants and animals, and *technical* nutrients such as plastics, synthetics, and metals. The two cycles become the butterfly's two wings, in which materials are never used up and thrown away but are used again and again through cycles of reuse and renewal.

On the biological wing, says Raworth, all nutrients are eventually consumed and regenerated through the living earth. The key to using them endlessly is to: ensure that they are harvested no faster than nature regenerates them; harness their many sources of value as they cascade through "the cycles of life"; and design production in ways that gift back to nature. Take coffee beans as a simple example: less than one percent of every bean ends up in a cup of coffee and the leftover coffee grounds are rich in cellulose, lignin, nitrogen and sugars. It would be foolish to throw such organic treasure straight onto the compost heap or, far worse, into the rubbish bin, but this happens in homes, offices and coffee shops worldwide. Coffee grounds, it turns out, make an ideal medium for growing mushrooms, and then can be used as feed for cattle, chickens and pigs, and so are returned to the soil as manure. From the humble coffee bean, imagine scaling that principle up to all food, crops, timber, and scaling it out to every home, farm,

firm and institution: it would start to transform our last-century forestry and food industries into regenerative ones that reap value from and then regenerate the living systems on which they depend.

On the butterfly's other wing, in contrast, products made using technical nutrients such as metals and synthetic fibres do not naturally decompose so they must be designed to be restored - through repair, reuse, refurbishment, and (as a last resort) recycling. Take mobile phones, for example, which are chock-full of gold, silver, cobalt, and rare earth metals, but are typically used for just two years, In the European Union, over160 million mobile phones are sold annually, but in 2010 only six percent of used phones were being reused, and nine percent disassembled for recycling: the remaining 85 percent ended up in landfill or lay defunct in the back of some drawer. In a circular economy they would be designed for easy collection and disassembly, leading to their refurbishment and resale, or the reuse of all their parts. Scale those principles across all industries and you start to turn twentieth-century industrial waste into twenty-first – century manufacturing food.

In a degenerative industrial economy, value is monetary, and it is created by searching for ever lower costs and ever-greater product sales: the typical result has been intense material throughflow. In a regenerative economy, that material throughflow is transformed into *round- flow*. But the real transformation comes from a new understanding of value. "There is no wealth but life", as John Ruskin wrote in 1860. His words were poetic, but they were prophetic too. Economic value lies not in the throughflow of products and services but in the wealth that is their recurring source.

That includes the wealth embodied in in human-made assets (from tractors to houses) but also the wealth embodied in people (from their individual skills to community trust), in a thriving biosphere (from the forest floor to the ocean floor), and in knowledge (from Wikipedia to the human genome). Yet even these forms of wealth eventually dissipate.

Tractors rust, trees decompose people die ideas are forgotten. Only one form of wealth persists through time and that is the regenerative power of life, powered by the sun. Ruskin was evidently a regenerative pioneer, says Raworth.

Welcome to the generous city

Factories and industries can be regenerative by design and so too can urban landscapes, says Raworth. Janine Benyus is bringing to life her vision to create what she calls "generous cities": human settlements that nestle within the living world. As a first step in the process, she starts by observing a city's native ecosystem – such as the nearby forest, wetland or savannah – and records the rate at which it harvests solar energy, sequesters carbon, stores rainwater, fertilizes soil, purifies the air, and more. These metrics are then adopted as the new city standard, challenging and inspiring its architects and planners to create buildings and landscapes that are "as generous as the wild-land next door".

Rooftops that grow food, gather the sun's energy, and welcome wildlife. Pavements that absorb storm water then slowly release it into aquifers. Buildings that sequester carbon dioxide, cleanse the air, treat their own wastewater, and turn sewage back into rich soil nutrients. All connected in an infrastructural web that is woven through with wildlife corridors and urban agriculture. Such design possibilities arise out of regenerative, not degenerative, questions. "Don't ask: what's my fair share to take?" Benyus explains, "Ask: What other benefits can we layer into this so we can give some away?"

No such city can be found on a map of the world, says Raworth, but there are enterprises and projects aiming to put its design principles into practice across continents. In the Netherlands, Park 20/20 is a business park designed on "cradle-to-cradle" principles, constructed with recyclable materials, an integrated energy system, a water treatment facility, and roofs that collect solar energy, store and filter water, block heat, and provide wildlife habitats. In California, the company Newlight Technologies is capturing methane emissions from dairy cows, turning them into bioplastic and making products such as bottles and office chairs – which have been independently verified as carbon – negative, sequestering greenhouse gas emissions across their entire life cycle. In the arid coastal lands of South Australia, Sundrop Farms is using seawater and sunlight to grow tomatoes and capsicums. Its state-of-the-art greenhouses harness solar energy to desalinate the saltwater, create heat, and generate electricity, all used to grow the crops. "We're not just addressing an energy issue or a water issue", says Philipp Saumweder, Sundrop's CEO, "we are addressing both of these together to produce food from abundant resources, and to do that in a sustainable way".

Villages, towns and cities in low-and middle-income countries are embracing regenerative design principles too. Bangladesh aims to become the first solar-powered nation and is training thousands of women as solar engineers who can install, maintain and repair renewable energy systems in their own villages. In Tigray, Ethiopia 220,000 hectares of decertified land have – astonishingly – been regenerated since 2000 thanks to farming communities that have built terraces and planted bushes and trees. They have restored once-barren hillsides to lush valleys that provide grain, vegetables and fruit for the surrounding villages and cities, while sequestering carbon, storing water and rebuilding the soil.

These pioneering examples are inspiring, says Raworth. Nascent technologies and enterprises like these need to be tested and adapted as they go to scale, but, she adds, they also – crucially – need to be enabled by an economic system that makes them feasible as investments, and that is where the twenty-first-century economist has a key role to play.

In search of the generous economist

Despite the potential of circular manufacturing and regenerative design, today's pioneering industrial and urban designers face a formidable challenge: working with business, finance and governments that are still trapped within the mindset and metrics of degenerative economic design. Janine Benyus knows the frustrations of this challenge at first hand. While collaborating with a large commercial land developer on designs for renovating the suburb of a major city, she proposed constructing buildings whose

biomimetic living walls would sequester carbon dioxide, release oxygen, and filter the surrounding air. The developer's first response? But why should I provide clean air for the rest of the city?"

It's an unsurprising question, remarks Raworth, indicative of the near ubiquitous business mindset that has arisen from the design of contemporary capitalism. And that design is the opposite of generous. It is focused instead on creating just one form of value - financial- for just one interest group: shareholders. While regenerative designers now ask themselves, "how many diverse benefits can we layer into this?", mainstream business still asks itself, "how much financial value can we extract from this?"

This partial embrace of regenerative design by many mainstream businesses is certainly visible in the way that we have so far put circular economy thinking into practice Corporate interest in forging "circular advantage" is growing fast, and companies leading the pack have adopted a niche set of circular economy techniques such as : aiming for zero waste manufacturing; selling services instead of products; and recovering their own brand goods – ranging from tractors to laptops – for refurbishment and sale. These are excellent strategies for efficient resource reuse, and they can be highly profitable too. By recovering and remanufacturing key component parts used in their products, the construction equipment company Caterpillar has increased gross profit on those product lines by 50 percent while cutting water and energy use by around 90 percent.

The trouble is, says Raworth, they just do not go far enough, and there is a clear reason why. Shaped to fit in with existing corporate interests, circular economy strategies to date have typically been top-down, driven by large corporations; in-house, with companies seeking to establish control over their used products; opaque, thanks to patented materials and proprietary technologies; and fragmented into disconnected parts, within and across industries. This is by no means a strong foundation for building a regenerative, let alone distributive, industrial ecosystem.

This leads Raworth to the conclusion that: Regenerative industrial design can only be fully realized if it is underpinned by regenerative economic design. And this is sorely missing, she says. Making it happen calls for rebalancing the roles of the market, the commons and the state. It calls for redefining the purpose of business and the functions of finance. And it calls for metrics that recognize and reward regenerative success.

The circular future is open

The glaring gap between the regenerative potential of the circular economy and its narrow efficiency-focused practice by corporations has inspired the launch of an Open-Source Circular Economy (OSCE) movement, says Raworth. Its worldwide network of innovators, designers and activists aims to follow in the footsteps of open-source software by creating the knowledge commons needed to unleash the full potential of circular manufacturing. Why a knowledge commons? Because, as those in the Open Source Circular Economy movement point out, the full regenerative potential of circular manufacturing cannot be reached by individual companies seeking to make it happen all

within their own factory walls: it is an illogical and unfeasible basis for creating a circular economy.

Sam Muirhead, one of the instigators of the Open-Source Circular Economy movement, believes that circular manufacturing must ultimately be open source because the principles behind open-source design are the strongest fit for the circular economy's needs. These principles include modularity (making products with parts that are easy to assemble, disassemble and rearrange), open standards (designing components to a common shape and size); open source (full information on the composition of materials and how to use them); and open data (documenting the location and availability of materials). In all this, transparency is key. "For whoever has the product at the end of its use, the recipe should be open source so anyone can see how to reuse its materials", Muirhead told me, and since that open recipe allows anyone to improve or adapt the product to their needs, "It means you have a distributed R&D team around the world made up of expert users like local repair shops, customization specialists, and innovative designers. These principles give rise to a set of circular business models that work not *despite* being open source but *because* they are open source".

So, what's going round in the emerging open-source circular economy? Raworth asks. Early pioneers include AXIOM, the open-source video camera for film makers, made by Apertus, which uses standardized components so it can be customized, reassembled, and continually reinvented by its user community. Look, too, at the fast –evolving OS Vehicle – the open source future of 100 percent electric cars – whose parts can be quickly assembled to make airport buggy's, a golf cart, or even a smart city car.

These open-source innovations are impressive but still fledgling, and to many the movement may look unfeasibly utopian, says Raworth. So, remember the 21-year-Finnish computer student, Linus Torvalds, who in 1991 was writing the kernel of an open-source operating system – just for a hobby, he said – which quickly morphed into Linux, now the most widely used computer operating system in the world. At the time, Microsoft's CEO Steve Ballmer called Linux "a cancer", but today even Microsoft has embraced the movement by using Linux in its own products. "The story of open-source software is a little portal to the future for us" Muirhead told me, and he is optimistic. "Once you put something in the commons, you can't take it away", he explained, "so every single day the knowledge commons grows and becomes more useful. Once people get the idea – and see its circular economy potential – they really want to create solutions for it."

That same spirit of building the knowledge commons inspired Janine Benyus to launch the website Asknature.org, which makes the long-held secrets of nature's materials, structures and processes open-source for all – such as how a gecho clings without glue, how butterflys make pigment-free colour, and how mussels glue themselves to watery rocks. Almost two million users, from high-school design students to research scientists, have learned from and contribute to the site since it began in 2008. Every contribution to its database helps to deter individuals and companies from seeking bogus patents with false claims of novelty on innovations that nature came up with billions of years ago. An open-source basis for regenerative design is certainly compelling. But if mainstream business is unlikely to embrace its full potential, asks Raworh, what kind of enterprise would be intent on making it work?

Redefining the business of business

"The social responsibility of business is to increase its profits ", said Milton Friedman back in 1970 and the mainstream business world willingly believed him. But Anita Roddick had a different take on that. In 1976, before the words to say it had been found, she set out to create a business that was socially and environmentally regenerative by design. Opening The Body Shop in the British seaside town of Brighton, she sold natural plant-based cosmetics (never tested on animals) in refillable bottles and recycled boxes while paying a fair price to the communities worldwide that supplied cocoa butter, brazil nut oil and dried herbs. As production expanded, the business began to recycle its wastewater for using in its products and was an early investor in wind-power. Meanwhile, company profits went to The Body Shop Foundation, which gave them to social and environmental causes. In all, a generous enterprise. Roddick's motivation? "I want to work for a company that contributes to and is part of the community," she later explained. "If I can't do something for the public good, what the hell am I doing?"

Such a values-driven mission is what the analyst Marjorie Kelly calls a company's *living purpose* – turning on its head the neoliberal script that the business of business is simply business. Roddick proved that business can be far more than that, by embedding benevolent values and a regenerative intent at the company's birth. "We dedicated the Articles of Association and Memoranda – which in England is the legal definition of the purpose of your company - to human rights advocacy and social and environmental change", she explained in 2005, "so everything the company did had that as its canopy".

Today's most innovative enterprises are inspired by the same idea: that the business of business is to contribute to a thriving world. And the growing family of enterprise structures that are intentionally distributive by design – including cooperatives, not-for-profits, community interest companies, and benefit corporations – can be regenerative by design too. By explicitly making a regenerative commitment in their corporate by-laws and enshrining it in their governance, they can safeguard a "living purpose" through times of leadership change and protect it from mission creep. Indeed, the most profound act of corporate responsibility for any company today is to rewrite its corporate by-laws, or articles of association, in order to redefine itself with a living purpose, rooted in regenerative and distributive design, and then to live and work by it.

Finance in service to life

A business that is built on a living purpose may have strong foundations, but without a source of finance that is aligned with its values it is unlikely to survive and thrive, says Raworth. Regenerative enterprise needs the support of financial partners seeking to invest long term in generating multiple kinds of value – human, social, ecological, cultural and physical - along with a fair financial return.

One unlikely financial rethinker who is taking on this design task is John Fullerton, a former managing director at JP Morgan. He walked away from Wall Street in early 2001 on an instinct that something was profoundly wrong with the way it worked, and he started reading widely. Gradually, he says, "I began to understand that the economic system is the root cause of the ecological crisis, and that finance is what drives the economic system. So as a twenty-year finance veteran hotshot, I had some rethinking to do. Starting with eight key principles that he believes underpin all complex living systems – including: taking a holistic view of wealth; being in "right relationship"; and seeking balance – Fullerton began using them to design what he calls "regenerative finance" with the aim of creating finance that is in the service to life.

When finance is in "right relationship" with the whole economy, he explains, it will no longer be driving it, but rather supporting it by turning savings and credit into productive investments that deliver long-term social and environmental value. That means, first, that the global financial system as we know it needs to shrink, simplify, diversify and deleverage – a transformation that will make it more resilient in the process, rather than ever prone to speculative bubbles and crashes. Policies for heading in that direction, suggests Fullerton, include separating customer's deposit accounts from the speculative activities of securities firms; introducing taxes and regulation that make it unprofitable to be too big, too leveraged and too complex, and a global transactions tax to rein in high-frequency trading.

Reining in short-term, speculative finance is a crucial start, but equally important is replacing it with long-term investment finance, says Raworth. State-led development banks have an obvious role here in offering "patient capital" for long-horizon investment such as renewable energy technologies and public transport systems. But there is a role, too, for private investors, ranging from the personal saver to institutional investors like pension funds and endowment funds. Community banks, credit unions and ethical banks may sound like small players, but they have taken the lead in this space. Take the Dutch bank TRIODS, for example, whose mission – or living purpose – is "to make money work for positive social and environmental, and cultural change", and which has over half a million customers across Europe: savers and investors, entrepreneurs and companies who share those values and aims. Or look to Florida's First Green Bank, established in the depth of the 2008 recession, which has set out to be a "regenerative bank", and is working with the support of Fullerton and his team at the think tank Capital Institute to explore what it will take to make that happen.

Finance that is in service to life, however, goes beyond redesigning investment to redesigning currency. Just as a currency's design – its creation, its character, and its intended use – can be distributive within a community, it can also be regenerative of the living world. The Belgian complementary currency guru, Bernard Lietar, loves this kind of challenge. "Give me a social or environmental problem", he once told me, "And I will design a currency to solve it'. One city in his home country took him up on that offer, inviting him to Rabot, a run-down district of Ghent. "I was given the impossible task: the worst neighbourhood in all of Flanders", he recounted with a twinkle in his eye, as he described the district: densely populated tower blocks housing a diverse and divided community of first-generation immigrants, surrounded by dilapidated public spaces. The challenge? "Can we create a nice neighbourhood to live in – where people say hello to each other – and which is 'greening', one of the priorities of the city?"

Lietar's first move was to ask the residents of Rabot what they wanted. The resounding answer: little plots of land for growing food. So, a five-hectare derelict factory site was soon converted into allotments available for rent, which was payable only in a new currency, Torekes, meaning "little towers", named after the district's ubiquitous tower blocks. And they can be earned by volunteering to collect litter, replant public gardens and repair public buildings, or by using the carpool and switching to green electricity. Along with paying the allotment rent, Torekes can be spent on bus travel and cinema tickets or used in local shops to buy fresh produce and energy-efficient light bulbs, so boosting their uptake. But their social value has reached even further. "When people see that immigrants who tend to be blamed as polluters themselves, are helping to clean up the neighbourhood, then that is a positive signal to anyone", notes Guy Reynebeau, head of Health and Welfare in the district. "Such actions can't be priced, not in Euros or Torekes".

Imagine taking this concept to the next level by integrating complementary currencies at the very design stage of a generous city.

Bring on the partner state

The state's role is key to ending the business-as-usual of degenerative economic design, says Kate Raworth. And it has many ways to actively promote a regenerative alternative, including restructuring taxes and regulations, stepping up as a transformative investor, and empowering the dynamism of the commons.

Governments have historically opted to tax what they could, rather than, what they should, and it shows, says Raworth. It is happening today in part thanks to the twentieth century's legacy of perverse tax policies, which charge firms for hiring humans (through payroll taxes), subside them for buying robots (through tax-deductible capital investments), and levy next to nothing on the use of land and non-renewable resources. In 2012, over 50 percent of tax revenue raised in the EU came from taxing labour; in the US, the percentage was even higher. It's no surprise that industry's response has been to focus on increasing labour productivity – output per worker – by replacing as many workers as possible with automatons.

The long-advocated switch from taxing labour to taxing non- renewable resources can be boosted by subsidies for renewable energy and resource-efficient investments, says Raworth. Such measures would refocus industry's attention away from raising *labour* productivity and towards raising *resource* productivity, dramatically reducing the use of new materials and creating jobs at the same time. Refurbishing buildings instead of demolishing them and building again from scratch, for example, typically generates more jobs, comparable energy consumption and far less water and new materials. One recent European study of the effects of promoting a circular economy along with renewable energy and energy-efficiency measures estimated that together they would generate around 500,000 jobs in France, 400,000 in Spain, and200,000 in the Netherlands.

Taxes and subsidies can move markets, says Raworth, but the transformation from degenerative to regenerative industrial design needs to be backed by regulation too. At its most simple, it means phasing out the use of "red list" chemicals and polluting production processes, while phasing in the use of lifefriendly chemistry only, along with net-zero and net-positive industrial standards. The world's most progressive enterprises are already aiming to perform to such standards: economy-wide regulations requiring regenerative design will ultimately help to move those ambitious business practices from being a rare exception to becoming the industry norm.

Moving markets clearly matter, but it is not enough, argues economist Mariana Mazzacato. This is especially true when it comes to the clean energy revolution, a crucial power source for the regenerative economy. "We cannot rely on the private sector to bring about the kind of radical reshaping of the economy that it requires", Mazzacato explains. "Only the state can provide the kind of patient finance required to make a decisive shift". The Chines government clearly shares her view of the state's role as a risk-taking partner: over the past decade it has invested billions of dollars in a portfolio of innovative renewable energy companies, supporting not just their research and development costs but demonstration and deployment too. At the same time, the Chinese Development Bank, along with state-owned utilities, is financing the world's biggest deployment to date of wind and solar-photovoltaic parks.

If the state can be a transformative partner in creating a regenerative economy, where is this happening? asks Raworth. To date, it is most visible in city-scale initiatives that are dotted across the globe. One such city is Oberlin, Ohio, located in America's "rust belt" of post-industrial decline. In 2009 the city administration teamed up with Oberlin College and the municipal light and power utilities with the goal of becoming one of America's first "climate positive" cities by sequestering more carbon dioxide than it produces. The initiative also aims to grow 70 percent of the city's food locally, conserve 20,000 acres of urban green space, and revive local culture and community, creating much-needed enterprises and jobs to make it all possible. By 2015, college- and city-run buildings were powered by 90 percent renewable energy and a growing proportion of food for the city's university, high schools, hospitals and government offices was sourced from local growers. Cultural life is reviving too, thanks to a new performing arts centre in the city's Green Arts District, and environmental education is now built into the public-school curriculum. "Our aim is full-spectrum sustainability", says David Orr, executive director of the Oberlin Project, explaining the systems thinking behind the project's design. "We need to recalibrate prosperity with the way that ecosystems work and what they can actually regenerate".

Pathways to a Post-Capitalist World

Once we understand that we can flourish without growth, says Jason Hickel, our horizons suddenly open up. It becomes possible to imagine a different kind of economy, and we're free to think more rationally about how to respond to the climate emergency. It's a bit like what happened during the Copernican Revolution. Early astronomers started from the assumption that the Earth sat at the centre of the universe, but this caused endless amounts of trouble: it meant that the movement of the other planets didn't make any sense. It created mathematical problems that were impossible to solve. When astronomers finally accepted that the Earth and other planets revolve around the Sun, suddenly all the maths became easier. The same thing happens when we take growth away from the centre of the economy. The ecological crisis suddenly becomes much easier to solve.

Let's start with the most immediate challenge we face, says Hickel. The IPCC indicates that if we want to stay under 1.5 degrees (or even two degrees), without relying on speculative emissions technologies, then we need to scale

down global energy use. Why? Because the less energy we use, the easier it is to achieve a rapid transition to renewables. Of course, low-income countries still need to increase their energy use in order to meet human needs. So, it's high-income countries we need to focus on here - countries that consume vastly more than they require.

This is not just about individual behavior change, like turning off the lights when you leave the room. Sure, this kind of thing is important (and obviously we need to switch to LED bulbs, improve home insulation and so on), but ultimately, we need to change how the economy works. Think of all the energy that's needed to extract and produce and transport all the stuff the economy churns out each year. It takes energy to pull raw materials out of the Earth, and to power the factories that turn them into finished products. It takes energy to package those products and send them around the world on trucks and trains and airplanes, to build warehouses for storage and retail outlets for sales, and to process all the waste when they're binned. Capitalism is a giant energy-sucking machine. In order to reduce energy use, we need to slow it all down. Slow the mad pace of extraction, production and waste, and slow down the mad pace of our lives.

This is what we mean by "degrowth", says Jason Hickel. Again, degrowth is not about reducing GDP. It is about reducing the material and energy throughput of the economy to bring it back into balance with the living world, while distributing income and resources more fairly, liberating people from needless work, and investing in public goods that people need to thrive. It is the first step toward a more ecological civilization. Of course, doing this may mean that GDP grows more slowly, or stops growing, or even declines. And if so, that's okay, because GDP isn't what matters. Under normal circumstances, this might cause a recession. But a recession is what happens when a growth-dependent economy stops growing: it's a disaster. Degrowth is completely different. It is about shifting to a different kind of economy altogether – an economy that's organized around human flourishing and ecological stability rather than around the constant accumulation of capital.

The Emergency Brake

As we saw earlier on, says Hickel, high-income nations consume on average 28 tons of material stuff per person per year. We need to bring that back down to sustainable levels.



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What's brilliant about focusing on materials is that it has a range of powerful benefits. Slowing down material use means taking pressure off ecosystems. It means less deforestation, less habitat destruction, less biodiversity collapse. And it means our economy will use less energy, thus enabling us to achieve a faster transition to renewables. It also means we will need fewer solar panels and wind turbines and batteries than would otherwise be the case, which means less pressure on the places (mostly in the Global South) where the materials for these things are extracted, and much less pressure on the communities that live there.

In other words, degrowth – reducing material and energy use- is an ecologically coherent solution to a multi-faceted crisis, says Hickel. And the good news is that we can do this without any negative impact on human welfare. How is this possible? He asks. The key is to remember that capitalism is a system that's organized around exchange-value, not around use-value. Most commodity production is geared toward accumulating profit rather than toward satisfying human needs. In fact, in a growth-oriented system, the goal is quite often to *avoid* satisfying human needs, and even to perpetuate need itself. Once we understand this, it becomes clear that there are huge chunks of the economy that are actively
and intentionally wasteful, and which do not serve any recognizable human purpose.

Step 1. End planned obsolescence

Nowhere is this tendency clearer than when it comes to the practice of planned obsolescence, says Hickel. Companies desperate to increase sales seek to create products that are intended to break down and require replacement after a relatively short period of time. The practice was first developed in the 1920s, when lightbulb manufacturers, led by the company General Electric, formed a cartel and plotted to shorten the lifespan of incandescent bulbs – from an average of about 2,500 hours down to 1,000 or even less. It worked like a charm. Sales shot up and profits soared. The idea quickly caught on in other industries, and today planned obsolescence is a widespread feature of capitalist production.

Take household appliances, for example, says Hickel – things like refrigerators washing machines, dishwashers and microwaves. Manufacturers admit that the average lifespan of these products has dropped to less than seven years. But when these products "die" it's due not to a system-wide failure, but rather to small electrical components that can easily be designed to last many years longer, at minimal cost. And yet to repair these parts is often prohibitively expensive, only marginally less than the cost of replacing the whole machine.

Indeed, in many cases appliances are designed to lock mechanics out of the job altogether. People end up scrapping huge chunks of perfectly good metal and plastic every few years for no good reason at all.

The same is true of the technological devices we use every day, says Hickel. Anyone who has ever owned an Apple product knows this all too well. Apple's growth strategy seems to rely on a triple tactic: after a few years of use, devices become so slow as to be worthless; repairs are either impossible or prohibitively expensive; and advertising campaigns are designed to convince people that their products are obsolete anyhow. Apple is not the only one, of course. Tech companies sold a total of 13 billion smartphones between 2010 and 2019. Only about 3 billion of them are in use today. That means 10 billion smartphones have been discarded over the past decade. Add desktops, laptops, and tablets and we're talking about mountains of needless e-waste – most of it generated by planned obsolescence. Every year, 150 million discarded computers are shipped to countries like Nigeria, where they end up in sprawling open-air dumps that leak mercury, arsenic and other toxic substances into the land.

It's not that the possibility for long-lasting, upgradable devices don't exist – it does- but its development is suppressed in favour of growth, says Jason Hickel. Our biggest technology firms, which we celebrate as our greatest innovators, stifle the innovation we need because it runs *against the growth imperative.* And it's not just appliances and smartphones. It's everything. Nylon stockings that are designed to tear after a few wears, devices with new ports that render old dongles and chargers useless – everyone has stories about the absurdities of planned obsolescence. IKEA became a multi-billion-dollar empire in large part by inventing furniture that is effectively disposable. Whole swathes of Scandinavia's forests have been churned into cheap tables and shelving units that are designed for the dump.

There's a paradox here says Hickel. We like to think of capitalism as a system that's built on rational efficiency, but realistically, it is exactly the opposite. Planned obsolescence is a form of intentional *inefficiency*. The inefficiency is (bizarrely) rational in terms of maximizing profits, but from the perspective of human need, and from the perspective of ecology, it is madness: madness in terms of the resources it wastes, and madness in terms of the needless energy it consumes. It is madness too in terms of human labour, when you consider the millions of hours that are poured into producing smartphones and washing machines and furniture simply to fill the void created, intentionally, by planned obsolescence. It's like shoveling ecosystems and human lives into a bottomless pit of demand. And the void will never be filled.

In a *genuinely* rational and efficient economy, companies like Apple would innovate to produce long-lasting, modular devices (like the Fairphone, for example), scale down their sales of new products, and maintain and upgrade existing stock wherever possible. But in a capitalist economy, this is not an option. Some might be tempted to blame individuals for buying too many smartphones or washing machines, but this misses the point. People become *victims* of this machine. Blaming individuals misdirects our attention away from the systemic causes.

How might we address these inefficiencies? Asks Hickel. One option is to introduce mandatory extended warranties on products. The technology already exists for appliances to last on average two to five times longer than they presently do, with lifespans up to thirty-five years, at little additional cost. With simple legislation, we could require manufacturers to guarantee their products for the duration of maximum feasible lifespans. If Apple was held to a 10-year guarantee, watch how quickly they would redesign their products to be resilient and upgradeable.

We could also introduce a "right to repair", making it illegal for companies to produce things that can't be repaired for ordinary users, or by independent mechanics, with affordable replacement parts. Laws along these lines are already being considered in several European parliaments. Another option would be to switch to a lease model for large appliances and devices, requiring manufacturers to assume full responsibility for all repairs with modular upgrades to improve efficiency whenever possible.

Measures like these would ensure that products (not just appliances and computers but furniture and houses and cars) would last many times longer than they presently do, says Hickel. If washing machines and smartphones lasted four times longer, we would consume 75 percent fewer of them. That's a big reduction of material throughput, without any negative impacts on people's lives. In fact, if anything it would improve quality of life, as people wouldn't have to deal with the frustration and expense of constantly replacing their equipment.

Step 2. Cut advertising

Planned obsolescence is only one of the strategies that growth-oriented firms use to speed up turnover. Advertising is another, says Jason Hickel.

The advertising industry has seen wild changes over the past century. Up to the 1920s, consumption was a relatively perfunctory act: people just bought what they needed. Advertisements did little more than inform customers of the useful qualities of a product. But this system posed an obstacle to growth, because once people's needs were satisfied, purchases slowed down. Companies seeking a "fix" – a way to surmount the limits of human need – found it in new theories of advertising being developed at the time by Edward Bernays, the nephew of psychoanalyst Sigmund Freud. Bernays pointed out that you can provoke people to consume far beyond their needs simply by manipulating their psychology. You can seed anxiety in people's minds, and then present your product as a solution to that anxiety. Or you can sell things on the promise that they will provide social acceptance, or class distinction, or sexual prowess. This kind of advertising quickly became indispensable to American companies desperate to generate growing demand.

A survey conducted in the 1990s revealed that 90 percent of American CEOs believed it would be impossible to sell a new product without an advertising campaign; 85 percent admitted that advertising "often" persuaded people to buy things they did not need; and 51 percent said that advertising persuaded people to buy things *they didn't actually want*. These are extraordinary figures, remarks Hickel. They reveal that advertising amounts to manipulation on an industrial scale. And in the age of the internet, it has become more powerful and insidious than even Bernays could have dreamed. Browser cookies, social media profiles and big data allow firms to present us with ads tailored not just to our personalities – our specific anxieties and insecurities – but even to our emotional state at any given time. Firms like Google and Facebook are worth more than companies like BP and Exxon, purely on the promise of advertising. We think of these companies as innovators, but most of their innovations appear to be focused on developing ever more sophisticated tools to get people to buy things.

It's a kind of psychological warfare, says Hickel. Just as the oil industry has turned to more aggressive ways of extracting reserves that are increasingly difficult to reach, so too advertisers are turning to more aggressive ways of getting at the last remaining milliseconds of our attention. They are fracking, as it were, for our minds. We are exposed to thousands of ads every day, and with every year that ticks by the ads become more insidious. It's an assault on our consciousness – the colonization not only of our public spaces but also of our minds. And it works. Research reveals that advertising expenditures have a direct and highly significant impact on material consumption. The higher the spend, the higher the consumption. And right now, the global advertising spend is rising fast: from \$400 billion in 2010, to \$560 billion in 2019, making it one of the biggest in the world.

There are many ways to curb the power of advertising, says Hickel. We can introduce quotas to reduce total ad expenditure. We can legislate against the use of psychologically manipulative techniques. And we can liberate public spaces from ads – both offline and online – where people don't have a choice about what they see. Sao Paulo, a city of 20 million people, has already done this in key parts of the city. Paris has made moves in this direction too, reducing outdoor ads and even banning them outright in the vicinity of schools. The results? Happier people: people who feel more secure about themselves and more content with their lives. Cutting ads has a direct positive impact on people's wellbeing. In addition to slowing down needless consumption, these measures would also free our minds – so we can follow our thoughts, our imaginations, our creativity without being constantly interrupted. And we can fill those spaces instead with art and poetry, or with messages that build community and affirm intrinsic values.

Some economists worry that limiting advertising would undermine market efficiency. Ads help people make rational decisions about what to buy, they say. But this claim doesn't hold water, says Hickel. Most advertising does exactly the opposite: it is designed to manipulate people into making *irrational* decisions.

And let's face it: in the age of the internet, people just don't need ads to find and evaluate products. A simple search is enough to do the trick. The internet has rendered advertising obsolete (ironically, for a place that has become filled with ads), and we should embrace this fact.

Step 3. Shift from ownership to usership

There is another inefficiency that's built into capitalism, says Jason Hickel. A lot of the stuff we consume is necessary but rarely used. Pieces of equipment like lawnmowers and power tools are used perhaps once a month, for maybe an hour or two at most., and for the rest of the year lie idle. Manufacturers want everyone to own a garage full of things that can otherwise quite easily be shared, but a more rational approach would be to establish neighbourhood workshops where equipment can be stored and used on an as-need basis. Some communities are already doing this, maintaining shared equipment with a neighbourhood fund.

Projects like these can be scaled up by city governments and enabled by apps for easy access. Shifting from ownership to usership can have a big impact on material throughput. Sharing a single piece of equipment among ten households means cutting demand for that product by a factor of ten, while saving people time and money in the process.

This is particularly true of cars, but ultimately, we also need to dramatically scale down the total number of cars, says Hickel. The most dramatic intervention by far is to invest in affordable (or even free) public transportation, which is more efficient in terms of materials and energy required to move people around. This is vital for any plan to get off fossil fuels. Bicycles are even better, as many European cities are learning. And for journeys that can't be made with either, we can develop publicly owned app-based platforms for sharing cars between us – without the rentier intermediation that has made platforms like Uber and Airbnb so problematic.

Step 4. End food waste

Here's a fact that never ceases to amaze me, says Hickel: up to 50 percent of all the food that's produced in the world – equivalent to 2 billion tons – ends up wasted each year. This happens across the supply chain. In high income nations its due to farms that discard vegetables that aren't cosmetically perfect, and supermarkets that use unnecessarily strict sell-by dates, aggressive advertising, bulk discounts and buy-one-get one-free schemes. Households end up tossing away 30-50 percent of the food they purchase. In low-income nations, it's due to poor transportation and storage infrastructure, which means food ends up rotting before it makes it to market.

Food waste represents an extraordinary ecological cost, in terms of energy, land, water and emissions, says Hickel. But it also represents a big opportunity.

Ending food waste could in theory cut the scale of the agricultural industry in half, without any loss of access to the food we presently need. That would allow

us to cut global emissions by up to 13 percent, while regenerating up to 2.4 billion hectares of land for wildlife habitat and carbon sequestration.

When it comes to degrowth, this is the low-hanging fruit, Hickel says. Some countries are already taking steps in this direction. France and Italy have both passed laws preventing supermarkets from wasting food (they must donate unsold food to charities instead). South Korea has banned food waste from landfills altogether and requires households and restaurants to use special composting receptacles that charge fees by weight.

Step 5. Scale down ecologically destructive industries

On top of targeting inefficiencies and waste, we also need to talk about scaling down specific industries that are ecologically destructive and socially less necessary, says Hickel. The fossil fuel industry is the most obvious example, but we can extend this logic to others.

Take the beef industry, for instance. Nearly 60 percent of global agricultural land is used for beef – either directly for cattle pasture or indirectly for growing feed. It's one of the most resource -inefficient foods on the planet, in terms of the land and energy it requires per calorie or nutrient. And the pressure to find land for pasture and feed is the single greatest driver of deforestation. As I write this, the Amazon rainforest is literally being burned for the sake of beef. Yet, far from being essential to human diets, beef accounts for only two percent of the calories humans consume. In most cases the industry could be radically scaled down without any loss to human welfare.

The gains would be astonishing, says Hickel. Switching from beef to nonruminant meats or plant protein like beans and pulses could liberate 11 million square miles of land – the size of the United States, Canada and China combined. This simple shift would allow us to return vast swathes of the planet to forest and wildlife habitat, creating new carbon sinks and cutting net emissions by up to eight gigatons of carbon dioxide per year, according to the IPCC. That's around 20 percent of current annual emissions. Scientists say that degrowing the beef industry is among the most transformative policies we could implement and is essential to avoiding dangerous climate change. A first step would be to end the subsidies high-income countries give to beef farmers. Researchers are also testing proposals for a tax on red meat, which they find would not only curtail emissions but deliver a wide range of public health benefits, while driving medical costs down.

The beef industry is just one example. There are many others we could consider. We could scale down the arms industry and the private jet industry. We could scale down the production of single-use plastics, disposable coffee cups, SUVs and McMansions (in the US, house sizes have doubled since the 1970s). Instead of building new stadiums for the Olympics every few years we could reuse existing infrastructure. We know that to reach our climate goals we will need to scale down the commercial airline industry, starting with policies like a frequent flier levy, ending routes that can be served by train and getting rid of first-class and business-class cabins, which have the highest carbon dioxide per passenger mile. And we must shift from an economy based on energy-intensive longdistance supply chains to one where production happens closer to home.

We need to have an open, democratic conversation about this, says Hickel. Rather than assuming all sectors must grow, forever, regardless of whether we need them, let's talk about what we want our economy to deliver. What industries are already big enough and shouldn't grow any larger? What industries could be usefully scaled down? What industries do we still need to expand? We have never asked these questions. During the coronavirus pandemic of 2020, we all learned the difference between "essential" industries and superfluous ones; it quickly became apparent which industries are organized around use-value, and which ones are mostly about exchange-value. We can build on those lessons.

This is not meant to be an exhaustive list, says Hickel. My point here is to illustrate that we can accomplish significant reductions in material throughput without any negative impact on human welfare. And here's the powerful part, he says. This approach would not only reduce the *flows* of material goods, but it would also reduce the *stocks* that support those flows. Half of all the materials that we extract each year go to building up and maintaining material stocks: things like factories and machines and transport infrastructure. If we consume half as many products, we also need half as many factories and machines to produce them, half as many aeroplanes and trucks and ship to transport them, half as many garbage trucks and waste disposal plants to process them when they're binned and half as much energy to produce and maintain and operate all that infrastructure. The efficiencies begin to multiply.

Ultimately governments need to set concrete targets for reducing material and energy use. As we saw previously, taxes alone won't be enough. Ecological economists insist that the only way to do it is with a hard limit: cap resource and energy use at existing levels and ratchet them down each year until you get back within planetary boundaries. There's nothing particularly radical about this, after all, we place all sorts of limits on capital's exploitation of people, including minimum wage laws, child labour laws, and the weekend. So, we need to place limits on capital's exploitation of nature. The key is that this must be done in a just and equitable way, to ensure that everyone has access to the resources and livelihoods they need to flourish, and so small business don't get squeezed out by bigger players. This can be done with a cap, fee and dividend system: charge industries a progressively rising fee for resource and energy use and distribute the yields as an equal dividend to all citizens. The Yellow Vests movement that erupted in France in 2018 rightly rejected the government's attempts to balance environmental goals on the backs of the working class and poor. Injustice cannot solve a problem that has been caused by injustice in the first place. We need to take the opposite approach.

But what about jobs?

Now here's where things get tricky, says Hickel. The policies I've suggested above are likely to reduce total industrial production. This might be okay from the perspective of human needs, but it does leave us with a difficult question. As products last longer, as we shift to sharing things, and as we slash food waste and scale down fast fashion, employment in these industries will decline and jobs will disappear across the supply chains. In other words, as our economy becomes more rational and efficient, it will require less labour.

From one perspective, this is fantastic news, says Hickel. It means that fewer lives will be wasted in needless jobs, producing and selling things that society doesn't need. It means liberating people to spend their time and energy on other things. But from the perspective of the individual workers who will be laid off from these jobs, it is a disaster. And governments will find themselves struggling to cope with unemployment.

This might seem like an impossible bind; and indeed, it's one reason why politicians consider degrowth so unthinkable, says Hickel. But there is a way out. As we shed unnecessary jobs we can shorten the working week, going from forty-seven hours (the average in the US) down to thirty or perhaps even twenty hours, distributing necessary labour more evenly among the working population and maintaining full employment. This approach would allow everyone to benefit from the time that's liberated by degrowth. And retraining programs can be deployed to ensure that people are able to transition easily from shrinking industries to other kinds of work, so no one gets left out. We can facilitate this process by introducing a public job guarantee (a policy that happens to be resoundingly popular), so that anyone who wants to work can get a job doing socially useful things that communities need, like care, essential services, building renewable energy infrastructure, growing local food, and regenerating degraded ecosystems – paid at a living wage. Indeed, a job guarantee is one of the single most powerful environmental policies a government could implement,

because it enables us to have an open conversation about scaling down destructive industries without worrying about the spectre of unemployment. The exciting part is that reducing working hours has a substantial positive impact on people's wellbeing. This effect has been demonstrated consistently, and the results are striking. Studies in the US have found that people who work shorter hours are happier than those who work longer hours, even when controlling for income. When France downshifted to the thirty-five-hour week, workers reported that their quality of life improved. An experiment in Sweden showed that employees who reduced their working time to thirty hours reported improved life satisfaction and better health outcomes. Data also shows shorter hours leave people feeling more satisfied with their jobs, boosting morale and happiness. And – perhaps best of all – shorter hours are associated with greater gender equality, both in the workplace and at home.

Some critics worry that if you give people more time off, they'll spend it on energy-intensive leisure activities, like taking long-haul flights for holidays. But the evidence shows exactly the opposite. It is those with *less* leisure time who tend to consume more intensively: they rely on high-speed travel, meal deliveries, impulsive purchases, retail therapy, and so on. A study of French households found that longer working hours are directly associated with higher consumption of environmentally intensive goods, even when correcting for income. By contrast, when people are given time off, they tend to gravitate towards lower-impact activities; exercise, volunteering, learning, and socializing with friends and family.

These effects play out across whole countries, says Hickel. For instance, researchers have found if the US were to reduce its working hours to the levels of Western Europe, its energy consumption would decline by a staggering 20 percent. Shortening the working week is one of the most immediately impactful climate policies available to us.

But perhaps the most important part about shortening the working-week is that it frees people to spend more time *caring* – be it nursing a sick relative, playing with the children, or helping restore a woodland. This essential reproductive work (most of which is normally done by women) is totally devalued under capitalism; it is externalized, unpaid, invisible and unrepresented in GDP figures.

Degrowth will free us to reallocate labour to what really matters – to things that have real use-value. Care contributes directly to social and ecological wellbeing and participating in caring activities has been shown to be more powerful than material consumption when it comes to improving people's sense of happiness and meaning, vastly outstripping the dopamine hit we might get from a shopping binge. The benefits of a shorter working week keep multiplying, says Hickel. One group of scientists summed up the evidence like this: "Overall, the existing research suggests, that working time reduction potentially offers a triple dividend to society: reduced unemployment, increased quality of life, and reduced environmental pressures." Transitioning to a shorter working week is key to building a humane, ecological economy.

There's nothing new about this idea, remarks Hickel. In fact, it's not even particularly radical. In 1930, the British economist John Maynard Keynes wrote an essay titled "Economic Possibilities for Our Grandchildren". He predicted that by the year 2030 technological innovation and improvements in labour productivity would free people to work only fifteen hours a week. Keynes turned out to be correct about productivity gains, but his prophecy about working hours never came true. Why not? Because gains in labour productivity have been appropriated by capital. Instead of shortening the working week and raising wages, companies have pocketed the extra profits and required employees to keep working just as much as before. In other words, productivity gains have been used not to liberate humans from work but rather to fuel constant growth.

In this sense, capitalism betrays the very Enlightenment values it claims to advance. We normally think of capitalism as organised around the principles of freedom and human liberation – that's the ideology it sells us. And yet while capitalism has produced the technological capacity for everyone's "needs" many times over, and to liberate people from unnecessary labour, it deploys that technology instead to create new "needs" and to endlessly expand the treadmill of production and consumption. The promise of true freedom is perpetually deferred.

Reduce inequality

As we shorten the working week, we need to ensure that wages remain adequate for people to live well, says Hickel. Some of this will be automatic, as a shorter working week and a job guarantee would strengthen the bargaining power of labour. But we can also introduce a living wage policy that's pegged to the week or month rather than to the hour. In a degrowth scenario, this means shifting income from capital back to labour, reversing the appropriation of productivity gains that has happened since Keynes penned his assay in 1930. A shorter working week would be funded in other words, by reducing inequality.

There's plenty of room for this, says Hickel. In the UK, Labour's share of national income has declined from 75 percent in the 1970s down to only 65 percent today. In the US it's down to 60 percent. Hourly wages at the bottom could be raised quite a lot by reversing these losses. There's plenty of room for this within

companies too. CEO compensation has grown to dizzying heights in recent decades, with some executives capturing as much as \$100 million per year. And the gap between CEO salaries and the wages of average workers has exploded. In 1965, CEOs earned about twenty times more than the average worker. Today they earn on average 300 times more. And in some companies the gap is even more extreme. In 2017, Steve Easterbrook, the CEO of McDonald's, earned \$21.7 million while the median full-time McDonald's worker earned \$7,017. That's a ratio of 3,100 to one. In other words, the average McDonald's employee would have to work 3,100 years – every day from the advent of ancient Greece until now – to earn what Steve Easterbrook received in his annual pay cheque.

One approach would be to introduce a cap on wage ratios: a "maximum wage" policy. Sam Pizzigati, an associate at the Institute for Policy Studies, argues that we should cap the after-tax wage ratio at 10 to one. CEOs would immediately seek to raise wages as high as they could reasonably go. It's an elegant solution, and it's not unheard of. Mondragon, a huge workers co-operative in Spain, has rules stating that executive salaries cannot be more than six times higher than the lowest-paid employee in the same enterprise. Better yet, we could do it on a national scale, by saying that incomes higher than a given multiple of the minimum wage would face 100 percent tax. Imagine how quickly the income distribution would change.

But it's not just income inequality that's a problem – it's wealth inequality too, says Hickel. In the US, for instance, the richest one percent have nearly 40 percent of the nation's wealth. The bottom 50 percent have almost nothing: only 0.4 percent. On the global level the disparities are even worse: the richest One percent have nearly 50 percent of the world's wealth. The problem with this kind of inequality is that the rich become extractive rentiers. As they accumulate money and property far beyond what they could ever use, they rent it out (be it residential or commercial properties, patent licenses, loans, whatever). And because they have a monopoly on these things, everyone else is forced to pay rents and debts. This is called "passive income", because it accrues automatically to people who hold capital without any labour on their part. But from the perspective of everyone else it is anything but passive: people must scramble to work and earn above and beyond what they would otherwise need, simply in order to pay rents and debts to the rich. It is like modern-day serfdom. And just like serfdom, it has serious implications for our living world. Serfdom was an ecological disaster because lords forced peasants to extract more from the land than they otherwise needed – all in order to pay tribute. This led to a progressive degradation of forests and soils. So, it goes today: we are made to plunder the Earth simply to pay tribute to millionaires and billionaires.

One way to solve this problem is with a wealth tax (or a solidarity tax, perhaps), suggests Hickel. The economists Emmanuel Saez and Gabriel Zucman have proposed a 10 percent annual marginal tax on wealth holdings over \$1 billion. This would push the richest to sell some of their assets, thus distributing wealth more fairly. But in an era of ecological crisis, we must be more ambitious than this. Afterall, nobody "deserves" this kind of wealth. It's not earned, it's extracted from underpaid workers, from cheap nature, from rent-seeking, from political capture and so on. Extreme wealth has a corrosive effect on our society, on our political system, and on the living world. We should have a democratic conversation about this: at what point does hoarding become destructive and unacceptable? \$100 million? \$5 million?

As we saw previously, reducing inequality is a powerful way to reduce ecological pressure, says Hickel. It cuts high-impact luxury consumption by the rich and reduces competitive competition consumption across the rest of society. But it also removes pressures for unnecessary growth. The policies I've proposed here would lead to a deaccumulation of capital. This would cut rent-seeking behaviour, and the rich would lose their power to force us to extract and produce more than we need. The economy would shift away from unnecessary exchange-value and more towards use-value. It would also reduce political capture and improve the quality of democracy; and democracy, as we will see later, has intrinsic ecological value.

Decommodify public goods and expand the commons

As we scale down excess industrial production, we can mitigate impact on livelihoods by distributing labour, income and wealth more fairly, says Hickel. But there's another crucial point to add. Remember, when it comes to human welfare, it's not income itself that matters; it's the welfare purchasing power of income that counts.

Let's take an example that's close to my own experience: housing in London. House prices are astronomically high, to the point where a normal two-bedroom flat may cost two thousand pounds a month to rent, or 600,000 pounds to buy. These prices bear no relationship to the cost of the land, materials and labour involved in building a house. They're a consequence of policy decisions, such as the privatization of public housing since 1980, and the low interest rates and quantitative easing that have pumped up asset prices since 2008. Meanwhile, wages in London have not kept pace – not even close. To cover the gap, ordinary Londoners have had to either work longer hours or take out loans (which represent a claim on their future labour), just to access a basic good they used to be able to get for a fraction of the cost. In other words, as house prices have soared, the welfare purchasing power of Londoners incomes has declined. Now imagine we drive rents down with permanent rent controls (a policy that 74 percent of British people happen to support). Prices would still be outrageously high, but suddenly Londoners would be able to work and earn less than they presently do *without any loss to their quality of life.* Indeed, they would gain in terms of extra time to spend with family, hanging out with friends, and doing things they love.

We could do the same with other goods that are essential to people's well-being, says Hickel. Healthcare and education are obvious ones. But why not the internet? Why not public transport? Why not basic quotas of energy and water?

Researchers at the University of London have demonstrated that a full range of what they call Universal Basic Services could be publicly funded (with progressive taxation on wealth, land, carbon, etc.) at costs much lower than we presently spend, while guaranteeing everyone access to a decent, dignified life. On top of this, we could invest in public libraries, parks and sports grounds.

Facilities like these become particularly important as we shorten the working week, so that people can spend their time in ways that enrich wellbeing with little environmental impact.

Decommodifying basic goods and expanding the commons allows us to improve the purchasing power of incomes, so people can access the things they need to live well without needing ever-higher incomes in order to do so. This approach reverses the Lauderdale Paradox we explored in Chapter 1. Capitalists enclose commons ("public wealth") in order to generate growth ("private riches"), forcing people to work more simply to pay for access to resources they once enjoyed for free. As we create a post-growth economy, we can flip this equation around: we can choose to restore commons, or create new commons, in order to render ever-rising incomes unnecessary. The commons becomes an antidote to the growth imperative.

A theory of radical abundance

This brings us to the real heart of post-capitalist economy, says Jason Hickel. Ending planned obsolescence, capping resource use, shortening the working week, reducing inequality and expanding public goods – these are all essential steps to reducing energy demand and enabling a faster transition to renewables. But they are also more than that. They fundamentally alter the deep logic of capitalism.

In Chapter1 we saw how the rise of capitalism depended on the creation of artificial scarcity. From the enclosure movement to colonization, scarcity had to

be *created* in order to get people to submit to low-wage labour, to pressure them to engage in competitive productivity, and to recruit them as mass consumers.

Artificial scarcity served as the engine of capital accumulation. This same logic operates today. It's all around us. Take the labour market, for example. People feel the force of scarcity in the constant threat of unemployment. Workers must become ever more disciplined and productive at work or else lose their jobs to someone who will be more productive still – usually someone poorer or more desperate. But as productivity rises, workers get laid off – and governments must scramble for ways to grow the economy in order to create new jobs.

Workers themselves join in the chorus calling for growth and push to elect politicians who promise it. But it doesn't have to be this way. We *could* deliver productivity gains back to workers in the form of higher wages and shorter hours. The constant threat of unemployment is due to an *artificial* scarcity of jobs.

We see the same thing happening when it comes to the distribution of income, says Hickel. The great majority of new income from growth gets syphoned off into the pockets of the rich, while wages stagnate, and poverty persists. Politicians call for more growth in order to solve these problems, and everyone who is moved by the tragedy of poverty lines up behind them. But it never works as they promise it will, because the yields of growth trickle down so slowly, if at all. Inequality perpetuates an artificial scarcity of income.

This plays out in the realm of consumption too, says Hickel. Inequality stimulates a sense of inadequacy. It makes people feel that they need to work longer hours to earn more income to buy unnecessary stuff, just so they can have a bit of dignity. In this sense, inequality creates an artificial scarcity of wellbeing. In fact, this effect is quite often wielded as an intentional strategy by economists and politicians. The British Prime Minister Boris Johnson once stated that "inequality is essential for the spirit of envy that keeps capitalism chugging along.

Planned obsolescence is another strategy of artificial scarcity. Retailers seek to create new needs by making products artificially short-lived, to keep the juggernaut of consumption from grinding to a halt. The same goes for advertising, which stimulates an artificial sense of lack; a sense that something is literally missing. Ads create the impression that we are not beautiful enough, or masculine enough, or stylish enough.

And then there's the artificial scarcity of time. The structural compulsion to work unnecessarily long hours leaves people with so little time that they have no choice but to pay firms to do things they would otherwise be able to do themselves: cook their food, clean their homes, play with their children, care for their elderly parents. Meanwhile, the stress of overwork creates needs for antidepressants, sleep aids, alcohol, dieticians, marital counselling, expensive holidays, and other products people would otherwise be less likely to require. To pay for these things, people need to work more to increase their incomes, driving a vicious cycle of unnecessary production and consumption.

We see artificial scarcity being imposed on our public goods too, says Hickel. Since the 1980s endless waves of privatization have been unleashed all over the world, of education, healthcare, transport, libraries, parks, swimming pools, water, housing, even social security. Social goods everywhere are under attack for the sake of growth. The idea is that by making public goods scarce, people will have no choice but to purchase private alternatives. And in order to pay, they will have to work more, producing additional goods and services that must find a market and thereby creating new pressures for additional consumption elsewhere in the system.

This logic reaches its height in the politics of austerity, which was rolled out across Europe in the wake of the 2008 financial crisis. Austerity (which is literally a synonym for scarcity) is a desperate attempt to restart the engines of growth by slashing public investment in social goods and welfare protections – everything from elderly heating allowances to unemployment benefits to public sector wages – chopping away at what remains of the commons so that people deemed too "comfortable or "lazy"" are placed once again under threat of hunger and forced to increase their productivity if they want to survive. This logic is overt, just as it was in the eighteenth and nineteenth centuries. During the government of British Prime Minister David Cameron, welfare cuts were conducted explicitly in order to get "shirkers" to work harder and to be more productive ("workfare" they called it).

Consistently, it becomes clear that scarcity is *created*, intentionally for the sake of growth. Just as during the enclosures in the 1500s, scarcity and growth emerge as two sides of the same coin.

This exposes a remarkable illusion at the heart of capitalism, says Hickel. We normally think of capitalism as a system that generates so *much* (just consider the extraordinary cornucopia of stuff that's displayed on television and in shopfronts). However, it is a system that is organized around the constant production of scarcity. Capitalism transforms even the most spectacular gains in productivity and income not into abundance and human freedom, but into new forms of artificial scarcity. It must, or else it risks shutting down the engine of accumulation itself. In a growth-oriented system, the objective is not to satisfy human need, but to *avoid* satisfying human needs. It is irrational and ecologically violent.

Once we grasp how this works, says Hickel, solutions rush into view. If scarcity is created for the sake of growth, then by reversing artificial scarcities we can render growth unnecessary. By decommodifying public goods, expanding the commons, shortening the working week and reducing inequality, we can enable people to access the goods that they need to live well without requiring additional growth in order to do so. People would be able to work less without any loss to their wellbeing, thus producing less unnecessary stuff and generating less pressure for unnecessary consumption elsewhere. And with our extra free time we would no longer have to engage in the patterns of consumption that are necessitated by time scarcity.

Liberated from the pressures of artificial scarcity, and with basic needs met, the compulsion to compete for ever-increasing productivity would wither away, says Hickel. The economy would produce less as a result, yes – but it would also *need* less. It would be smaller and yet nonetheless much more abundant. In such an economy private riches (or GDP) may shrink, reducing the incomes of corporations and the elite, but public wealth would increase, improving the lives of everyone else. Exchange -value might go down, but use-value will go up.

Suddenly a new paradox emerges. *Abundance* is revealed to be the antidote to growth. In fact, it neutralises the growth imperative itself, enabling us to slow down the juggernaut and release the living world from its grip. As Giorgos Kalis has pointed out, "capitalism cannot operate under conditions of abundance". Some critics have claimed that degrowth is nothing more than a new version of austerity. But in fact, exactly the opposite is true, says Jason Hickel. Austerity calls for scarcity in order to generate more growth. Degrowth calls for abundance *in order to render growth unnecessary*. If we are to avert climate breakdown, the environmentalism of the twenty-first century must articulate a new demand: a demand for radical abundance.

The law of Jubilee

Reversing artificial scarcity is a powerful step towards liberating us from the tyranny of growth, says Hickel. But there are also other pressures we must deal with -other growth imperatives to neutralize.

Perhaps the most powerful of these is debt. If you're a student who wants to go to university, or a family that wants to buy a home, you might have to take out a loan to do so. And the thing about loans is that they come with interest, and interest is a compound function that makes debts grow exponentially. When you owe debts to private creditors you can't just be satisfied with earning back as much as you borrowed: you need to find ways to grow your earnings fast enough to pay off the growing debt. You may end up having to pay off your original loan many times over – perhaps even for the rest of your life. If you don't, then debt piles up and eventually triggers a financial crisis. Either you grow or you collapse.

Compound interest creates a kind of artificial scarcity. And it has direct ecological impact. Countries loaded with external debts are under heavy pressure to deregulate logging and mining and other extractive industries, plundering ecosystems in order to meet their debt obligations (this is not true for deficits that governments owe to their central banks, however; unlike external debts, these don't have to be repaid). The same is true of households. Researchers have found that households with high-interest mortgages work longer hours than they would otherwise need to simply in order to stay afloat. As the anthropologist David Graeber has observed, the financial imperatives of debt "reduce us all, despite ourselves, to the equivalent of pillagers, eyeing the world simply for what can be turned into money".

Fortunately, there's a way to relieve this pressure, says Hickel. We can just cancel some of the debt. In an era of ecological breakdown, debt cancellation becomes a vital step towards a more sustainable economy. This may sound radical, but there's plenty of precedent for it. Ancient Near-Eastern societies regularly declared non-commercial debts void, clearing the books and liberating people from bondage creditors. This principle was institutionalized in the Hebrew Law of Jubilee, which decreed that debts should be automatically cancelled every seventh year. Indeed, debt cancellation became the core to the Hebrew concept of redemption itself.

There are dozens of proposals for how we might do this in today's economy. The US presidential candidate Bernie Sanders laid out a clear plan for cancelling student debts, which in 2020 stood at a staggering \$1.6 trillion. Academics at King's College London have published a plan for how governments could write off not just student debts but also other unjust debts: mortgage debts created by housing speculation and quantitative easing. Old debts whose lenders have been bailed out by governments, and unpayable debts that are devalued on secondary markets. We know it's possible. In the wake of the coronavirus disaster in 2020, governments in several countries suddenly found the ability to make debts disappear.

We can do the same thing with the external debts held by global South countries, which have been rising at an alarming rate, says Hickel. Big chunks of that debt are leftovers from the 1980s, when the US Federal Reserve raised interest rates so high as to put whole countries into permanent bondage to Wall Street. Then there are debts that were sold by corrupt lenders, and debts accumulated by old dictators with no democratic mandate who have long since been deposed.

Researchers with the Jubilee Debt Campaign have proposed clear mechanisms for cancelling unjust debts like these, which would liberate poor countries from the pressure to plunder their own resources and exploit their citizens in the constant hunt for growth. Indeed, this is an important first step towards the reparations that rich countries owe for the climate debts they hold with respect to the rest of the world.

Big creditors would lose out, of course, but we might decide that this is okay – a loss we're willing to have them bear in order for us to build a fairer and more ecological society. We can cancel debts in such a way that nobody gets hurt. Nobody dies. Compound interest is just a fiction, after all. And the nice thing about fiction is that we can change them. Perhaps no one has put this more eloquently than David Graeber:

Debt cancellation would be salutary not just because it would relieve so much human suffering, but also because it would be our way of reminding ourselves that money is not ineffable, that paying one's debts is not the essence of morality, that all things are human arrangements and that if democracy is going to mean anything, it is the ability to all agree to arrange things in a different way.

New money for a new economy

But debt cancellation is just a one-off fix; it doesn't really get to the root of the problem, says Hickel. There's a deeper issue we need to address, he says.

The main reason our economy is so loaded with debt is because it runs on a money system that *is itself debt*. When you walk into a bank to take out a loan, you might assume that the bank is lending you money it has in its reserve, collected from other people's deposits and stored in a basement vault somewhere. But that's not how it works. Banks are only required to hold reserves worth about 10 percent of the money they lend out, or even less. This is known as "fractional reserve banking". In other words, banks lend out about ten times more money than they actually have. So where does that extra money come from, if it doesn't really exist? Banks create it out of thin air when they credit your account. They literally *loan it into existence*.

More than 90 percent of the money that's presently circulating in our economy is created in this manner, says Hickel. In other words, almost every single dollar that passes through our hands represents somebody's debt. And this debt must be paid back with *interest* – with more work, more extraction and more production. This is extraordinary, when you think about it. It means that banks effectively sell a product (money) that they produce out of nothing, for free, and then require people to go out into the real world and extract and produce real

value to pay for it. It is so outlandish as to offend common sense. As Henry Ford put it in the 1930s: "It is perhaps well enough that people of the nation do not know or do not understand our banking and monetary system, for if they did, I believe there would be a revolution before tomorrow morning".

Now, here's the problem. Banks create the principle for all the loans they give, but they don't create the money needed to pay the interest. There is always a deficit, always a scarcity. This scarcity creates intense competition, forcing everyone to scramble to find ways to get the money to pay back their debts, including by taking out more debt.

If you've ever watched a game of musical chairs, you have an idea of how this game plays out. Each round of the game ramps up the scarcity of chairs, and players must fight each other to get to one of the few that are left. It's chaos. Now imagine we up the stakes. Instead of just getting knocked out of the game, you lose your home, your kids go hungry, and you can't pay for medicines. Think about what such a game would look like – the desperate measures people would take to get a chair – and you have a rough picture of how the economy works.

Casual observers of capitalist societies might conclude – as many economists have done – that vicious competition, maximization and self-interested behaviour are hard-wired into human nature. But is it really human nature that makes us behave this way? Or is it just the rules of the game?

Over the past decade ecological economists have concluded that a money system based on compound interest is incompatible with sustaining life on a delicately balanced living planet, says Hickel. As for what to do about it, there are several ideas floating around. One group argues that all we need to do is switch from the existing compound interest system, where debt grows exponentially, to a simple interest system, where it grows linearly – adding the same increment each year. Over time this would put a huge dent in total debt levels, bring our money system back in line with ecology, and allow us to shift to a post-growth economy without causing a financial crisis.

A second group argues that we need to go further and abolish debt-based currency altogether. Instead of letting commercial banks create credit money, we could have the state create it – free of debt – and then *spend it* into the economy instead of *lending* it into the economy. The responsibility for money creation could be placed with an independent agency that is democratic, accountable and transparent, with a mandate to balance human wellbeing with ecological stability. Banks would have to back it with 100 percent reserves, dollar for dollar.

This is not a fringe idea, states Hickel. It was first proposed by economists at the University of Chicago in the 1930s, as a solution to the debt crisis of the Great Depression. It made headlines again in 2012 when it was promoted by some progressive IMF economists as a way of reducing debt and making the global economy more stable. In the UK, a campaigning group called Positive Money has built a movement around the idea, and now it's being picked up as another step towards a more ecological economy. What's powerful about this approach isn't just that it reduces debt, but that a public money system would enable us to fund things like a universal healthcare, a job guarantee, ecological regeneration and energy transition *directly*, without having to chase GDP growth in order to generate revenues.

A post-capitalist imaginary

When people talk about "overthrowing" or "abolishing" capitalism, it can leave us with a real sense of unease about what will come afterwards, says Jason Hickel. It's easy to feel angry about our economic system, especially as we watch our planet die, but those who call for revolution all too rarely define what the new society might look like. It makes the future seem scary and unpredictable – who knows what nightmares might fill the void?

But when we focus on how to release our system from the growth imperative, we begin to get a sense of what a post-capitalist economy might look like. And it is not scary at all. This is not the command-and-control fiasco of the Soviet Union, or some back-to-the-caves, hair-shirted disaster of voluntary impoverishment.

On the contrary, it's an economy that feels in key ways *familiar*, in the sense that it resembles the economy as we normally describe it to ourselves (in other words, perhaps as we wish it to be): an economy where people make rational, informed decisions about what to buy; an economy where people get compensated fairly for their labour; an economy that satisfies human needs while minimizing waste; an economy that circulates money to those who need it; an economy where innovation makes better, longer-lasting products, reduces ecological pressure, frees up labour time and improves human welfare; an economy that responds to – rather than ignores – the health of the ecology on which it depends.

And yet inasmuch as it is familiar in these ways, the new economy is fundamentally *different* from our existing economy, in that it is not organized around the prime objective of capitalism: accumulation.

Let me be clear: none of this will be easy, states Hickel. We would be naïve to think otherwise. And there are still difficult questions to which we yet don't have all the answers. No one can give us a simple recipe for a post-capitalist economy;

ultimately it must be a collective project. All I've done here is offer a few possibilities that I hope will nourish the imagination. As for how to make it happen – that will require a movement, as with every struggle for social and ecological justice in history. And to some extent it is already emerging from the school climate strikes to Extinction Rebellion, from Via Campesina to Standing Rock; people are not only yearning for a better world, they are mobilizing to bring it into being.

I am not a political strategist, but I do want to offer one hopeful observation, says Hickel. Some people worry that there's no way we can possibly accomplish the transition that's required unless we have a totalitarian government impose it from above. But this assumption doesn't hold water. In fact, the opposite is true.

The power of democracy

In 2014, a team of scientists based at Harvard and Yale published a remarkable study on how people make decisions about the natural world, says Hickel. They were interested in whether people will choose to share finite resources with future generations. Future generations pose a problem because they cannot reciprocate with you. If you choose to forgo immediate monetary gain in order to preserve ecology for your grandchildren, they can't offer the favour back – so you gain little from sharing. In the light of this, economists expect that people will make a "rational" choice to exhaust resources in the present and leave future generations with nothing.

But it turns out that people don't actually behave this way. The Harvard-Yale team put people in groups and gave them each a share of common resources to be managed across generations. They found that, on average, a full 68 percent of individuals chose to use their share sustainably, taking only as much as the pool could regenerate, sacrificing possible profits so that future generations could thrive. In other words, most people behave exactly the opposite to how economic theory predicts.

The problem is that the other 32 percent chose to liquidate their share of the resources for the sake of quick profits. Over time, this selfish minority ended up depleting the collective pool. Leaving each successive generation with a smaller and smaller supply of resources to work with. The losses compounded quickly over time: by the fourth generation the resources were completely exhausted, leaving future generations with nothing – a striking pattern of decline that looks very similar to what's happening to our planet today.

Yet when the groups were asked to make decisions collectively, with direct democracy, something happened. The 68 percent were able to overrule the selfish minority and keep their destructive impulses in check. In fact, democratic decision-making encouraged the selfish types to vote for more sustainable decisions, because they realized they were all in it together. Consistently, the scientists found that under democratic conditions, resources were sustained for future generations, at 100 percent capacity, indefinitely. The scientists ran the experiments for up to twelve generations and kept getting the same results: no net depletion. None.

What's so fascinating about this is that it shows widespread and intuitive support for what ecological economists call a "steady state" economy. A steady-state economy follows two key principles in order to stay in balance with the living world:

- 1. Never extract more than ecosystems can regenerate.
- 2. Never waste or pollute more than ecosystems can safely absorb.

To get a steady-state economy, we need to have clear caps on resource use and waste. For decades, economists have told us that such caps are impossible, because people will see them as irrational. It turns out they're wrong. If given half a chance, this is *exactly* the kind of policy people want.

This helps us see our ecological crisis in a new light, says Hickel. It's not "human nature" that's the problem here. It's that we have a political system that allows a few people to sabotage our collective future for their own private gain.

How could this be? Hickel asks. After all, most of us live in democracies – so why do real-life policy decisions look so different from what the Harvard-Yale experiment predicts? The answer is that our "democracies" are not actually very democratic at all. As income distribution has grown increasingly unequal, the economic power of the richest has translated directly into increased *political* power. Elites have managed to capture our democratic systems. We can see this particularly clearly in the United States, where corporations have the right to spend unlimited amounts of money on political advertising, and where there are few restrictions on donations to political parties. These measures - justified according to the principle of "free speech" - have made it difficult for politicians to win elections without direct support from corporations and billionaires, placing them under pressure to align with the policy preferences of elites. On top of this, large companies and rich individuals spend an extraordinary amount of money lobbying governments. In 2010, \$3.55 billion was spent on lobbying, up from \$1.45 billion in 1998. And it pays off: one study found that money spent on lobbying the US Congress earned returns of up to 22,000 percent in the form of tax breaks and profits from preferential treatment.

As a result of political capture, the interests of economic elites in the US almost always prevails in government policy decisions even when a most citizens disagree with them. In this sense, the US resembles a plutocracy more than a democracy.

Britain exhibits similar tendencies, albeit for different (and older) reasons. Britain's financial hub and economic powerhouse, the City of London, has long been immune from many of the nation's democratic laws and remains free of parliamentary oversight. Voting power in the City of London council is allocated not only to residents, but also to businesses: and the bigger the business, the more votes it gets, with the largest firms getting 79 votes each. In parliament, the House of Lords is filled not by election but by appointment, with ninety-two seats inherited by aristocratic families, twenty-six set aside for the Church of England, and many others "sold" to rich individuals in return for campaign donations.

We can see similar plutocratic tendencies when it comes to finance, says Hickel. A significant chunk of shareholder votes is controlled by massive mutual funds like Black Rock and Vanguard that have no democratic legitimacy. A small number of people decide how to use everyone else's money, and exert extraordinary influence over companies' practices, pushing them to prioritize profits above social and ecological concerns. Then there's the media. In Britain, three companies control over 70 percent of the newspaper market – and half of that is owned by Rupert Murdoch. In the US, six companies control 90 percent of the media. It is virtually impossible to have a real, democratic conversation about the economy under these conditions.

The same is true on an international level, says Jason Hickel. Voting power in the World Bank and the IMF – two of the key institutions of global economic governance – is allocated disproportionately to a small number of rich countries. The global South, which has 85 percent of the world's population, has less than 50 percent of the vote. Similar problems plague the World Trade Organization, where bargaining power depends on market size. The world's richest economies almost always get their way when it comes to crucial decisions about the rules of the global trade system, while poorer counties – those that have the most to lose from ecological breakdown are routinely overruled.

One of the reasons we're staring down the barrel of an ecological crisis right now is because our political systems have been completely corrupted. The preferences of the majority who want to sustain our planet's ecology for future generations are trumped by a minority of elites who are quite happy to liquidate everything. If our struggle for a more ecological economy is to succeed, we must seek to expand democracy wherever possible. That means kicking big money out of politics: it means radical media reform; strict campaign finance laws; reversing corporate personhood; dismantling monopolies; shifting to cooperative ownership structures; putting workers on company boards; democratizing shareholder votes; democratizing institutions of global governance; and managing collective resources as commons wherever possible. I opened this book by pointing out that large majorities of people across the world are questioning capitalism and yearning for something better. What if we had an open, democratic conversation about what kind of economy we want? What would it look like? How would it distribute resources? Whatever shape it might take, I think it's safe to say it wouldn't look anything like our current system, with its extreme inequality and its tyrannical obsession with endless growth. Nobody really wants that.

We have long been told that capitalism and democracy are part of the same package, says Hickel. However, the two may well be incompatible. Capital's obsession with perpetual growth at the expense of the living world runs against the values of sustainability that most of us hold. When people are given a say in the matter, they end up choosing to manage the economy according to steadystate principles that run counter to the growth imperative. In other words, capitalism tends to be anti-democratic, and democracy tends to be anti-capitalist.

This is interesting says Hickel, because both traditions emerge, at least in part, from the history of Enlightenment thought. On the one hand the Enlightenment was a quest for the autonomy of reason – the right to question received wisdom handed down by tradition, or by authority figures, or by gods. This is at the core of how we understand democracy. On the other hand, the dualist philosophy of Enlightenment thinkers like Francis Bacon and Renee Descartes celebrated the conquest of nature as the basic logic of capitalist expansion. Ironically, these two separate projects of the Enlightenment are not allowed to meet. We are not permitted to question capitalism and the conquest of nature. To do so is considered a kind of heresy. In other words, we are encouraged to believe in the values of critical independent thought, but not if it means questioning capitalism. In an age of ecological breakdown, says Jason Hickel, we must break this barrier down. We must subject capitalism to scrutiny – to reason. The journey to a post-capitalist economy begins with the most basic act of democracy.

In conclusion let us remind ourselves of what that post-capitalist economy is based on. In Jason Hickel's words: Degrowth is not about reducing GDP. It is about reducing the material and energy throughput of the economy to bring us back into balance with the living world while distributing income and resources more fairly, liberating people from needless work, and investing in public goods that people need to thrive.

It is the first step towards a more ecological civilization...It is about shifting to a different economy altogether – an economy that's organized around human

flourishing and ecological stability rather than around the constant accumulation of capital.

The crises that envelop us and which are inherent in our political economic system demand that we change course urgently.

The possibility of degrowth offers us a lifeline to an alternative future and is worth serious consideration.

References

- Angus. Ian 2018. *Links Journal of Socialist Renewal*. August.
- Hewson. John 2022. *The Saturday Paper.* "Global Warning" September 24-30.
- Hickel. Jason 2020. *Less is More: How Degrowth Will Save the World.* Windmill Books London.
- Jackson. Tim 2017. *Prosperity Without Growth: Foundations For The Economy Of Tomorrow* (Second Edition) Routledge Abingdon Oxon.
- Hinman. Pip 2022. *Green Left Weekly* "COP27: Chris Bowen's silence on fossil fuel expansion gives the game away" November 22.
- Hinman. Pip 2022. *Green Left Weekly* "Big Challenge Ahead" December 13.
- O'Malley. Nick 2022. *Sydney Morning Herald* "Who will save planet Earth from humans?" September 3.
- O'Malley. Nick 2022. *Sydney Morning Herald* "Small islands find a way to be heard over the roar of battle" September 24.
- Radford. Ben 2022. *Green Left Weekly* "Capitalism won't cure the climate crisis" November 22.
- Raworth. Kate 2017. *Doughnut Economics: Seven Ways To Think Like a 21 st- Century Economist* Random House Business Books Verso London.
- Schmelzer. Matthias, Vetter. Andrea, Vansintjan. Aaron 2022. *The Future Is Degrowth: A Guide to a World Beyond Capitalism* Verso London.
- Seccomb. Mike 2022. *The Saturday Paper* "Fair COP" November 12-18.
- Wade. Matt 2022. Sydney Morning Herald "The hungriest place on Earth" October14.