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insight.

Blue Skies Ahead

Photographed by Edan Webb

Letter from the Editor-in-Chief

Welcome to the 30th issue and 15th Year Anniversary of Insight Magazine!

With a celebratory spirit, this special issue with its theme, 'Blue Skies Ahead', signifies optimism and the drive to go forward. For our writers, this meant challenging the status quo and exploring their respective areas of interest, offering fresh perspectives on what lies ahead.

A special focus is placed on our home, Edinburgh– a city steeped in arts, culture, and history. This issue offers something for everyone, sparking curiosity at every turn.

As always, huge thanks must go to the writers for their fantastic articles, our editorial and production teams for all their hard work, Edan Webb and the other individuals with an artistic eye, and finally to the School for Economics for making this magazine possible.

All the best,

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Hannah Zuraimi

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Spring 25

Contents

BLUE SKIES AHEAD

Insight Prize

Gabriel Pais Gaspar
From Crisis to Growth: A Case Study of the PIIGS Post Euro-zone Crisis, a Lesson for Northern Europe?
page 18

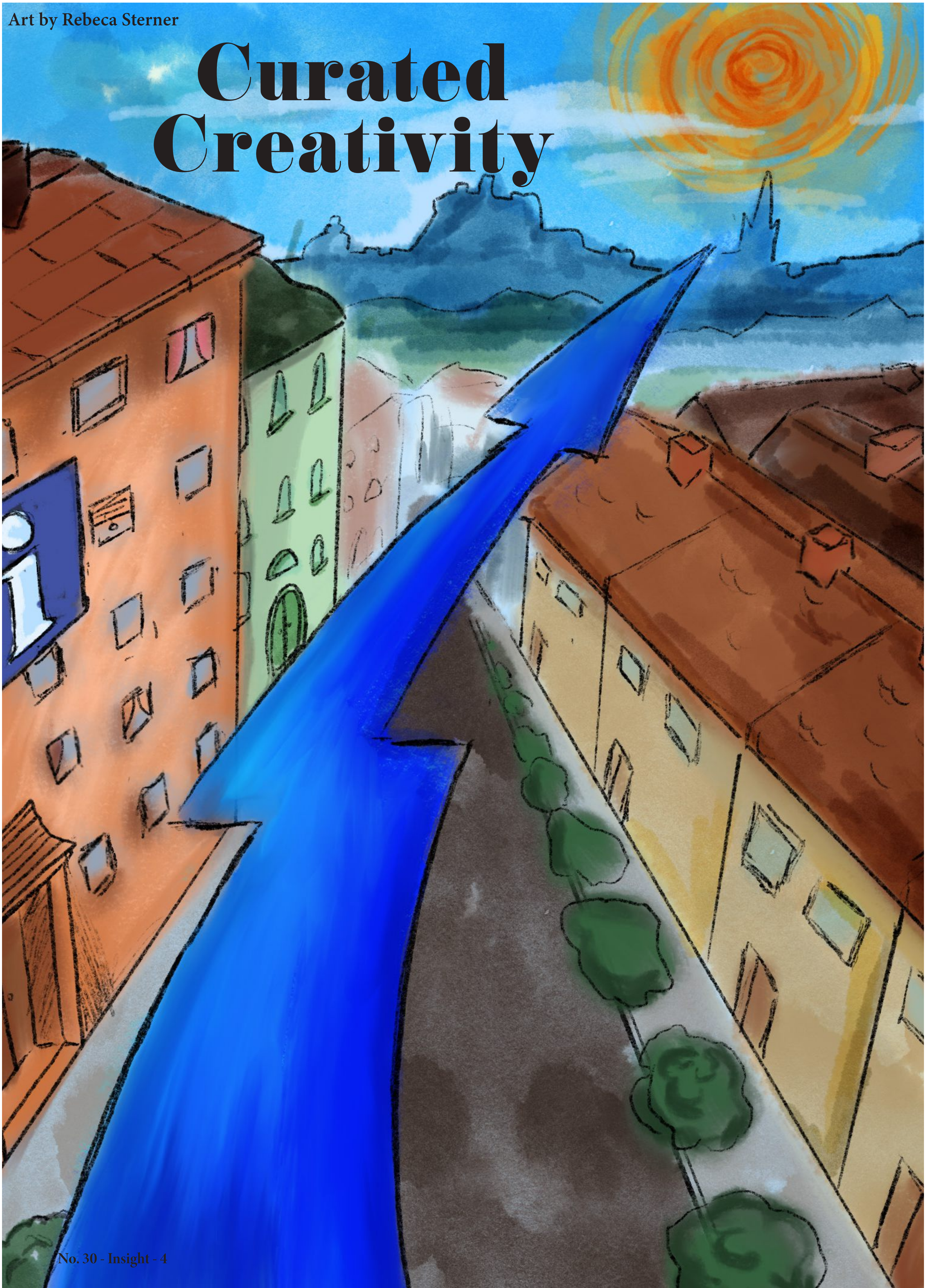
Winner

Logan McKinnon
Pricing Behind the Glass
page 5

Runner Up

Art by Rebeca Sterner

Curated Creativity



Runner-Up of the Insight Prize

Pricing Behind the Glass

***Logan McKinnon** uncovers the hidden economics of museums, revealing how they balance cultural preservation, visitor experience, and the ever-growing pressure to generate revenue—all while keeping art accessible to the world.*

They took all the trees
And put them in a tree museum
And they charged the people
A dollar and a half just to see 'em
Joini Mitchell, 'Big Yellow Taxi'

The timeless lyrics of Joni Mitchell continue to resonate across generations, offering solace and comfort amongst present environmental devastation, political crises, and an overwhelming sense of dread looming over the state of the world today. The lyrics of Big Yellow Taxi serve as a reminder that culture and heritage should be available to all. Our museums are not a space to shut away cultural heritage, but to display it. Present times require light, and our museums are a burning flame illuminating our greatest cause for hope amidst present darkness: culture.

Nonetheless, this comes with a caveat – we can only see culture's glistening light if we treat our museums as economic institutions. Blasphemy! Artists of past times weep, with French symbolist Stéphane Mallarmé remarking in 1889, 'To seek to assign a work of art its real price, in money, is to insult it.' But just as Galileo's heliocentric teachings were initially deemed blasphemous by the Church, my duty is to seek the truth of economics' value in the arts – especially in museums. Our first judgement is that our arts are inherently valuable, with museums producing commodities of great worth directly through their consumption – whether knowledge, aesthetic experience, or simply enjoyment.

These qualities enrich the substance of our lives! A visit to the museum is filled with bonding, insight, and –if presented well–, entertainment and joy. Our society may rest under a sky of grey, mirroring the dullness of Edinburgh springtime, but such clouds could eventually dissipate provided we embrace our museums, and do so within economic thinking. Only then will tomorrow's blue skies arrive.

Pricing Pretty Pennies

Visiting the museum often involves confronting a set of impressively grand glass doors (and often an even grander queue). Passage through these doors presents our first problem: pricing, and whether to set a price at all. Our museums, generally experiencing inelastic demand, carry great potential for profit. However, their unique institutional status requires thinking differently about our museums.

The visitor – whether local, domestic, or foreign – is just one piece of the puzzle, each generating different elasticities presenting us with a complex jigsaw beyond their demand determinants.

The museum itself is more valuable in our analysis – as an institution near-universally recognised to be socially beneficial and functioning as a merit good. Its extremely large fixed costs and negligible variable costs (until extreme congestion sets in) provide us with a uniquely efficient pricing structure for the museum: not to charge. The question here is very much 'who benefits?' from museums, but when we think of the institutional character of the museum, signs point towards charging ***zilch, nada, or naught.***

However, this doesn't equal generating zero revenue. Public and private grants are museums' bread and butter for funding and collection building – but the treasure of the modern museum is the donation box upon entry and exit. This encourages voluntary price discrimination to capitalise on the immense satisfaction the museum provides, providing an incentive for museums to maintain high standards Then the money flows in through such donations, guidebooks, or overpriced lattes that are the backbone of the museum's ability to share culture with the world. So, throw open those grand glass doors and cast your gaze instead to what sits behind the glass. There we can still make a pretty penny, even if our exhibited items are, well...pretty pennies.

Hoarders of Heritage

Behind the glass lies an object, just one of a collection of thousands, and thus the curator must choose, with opportunity cost as the archnemesis. To decide what lies behind the glass on the value of objects appears obvious, but such a culturally removed approach only attracts the ire of curators. Additionally, such a practice disqualifies any museum or gallery from being recognised as such in the UK. Curators are acutely aware of the aesthetic importance and complementariness in the display of the collection. Nonetheless, our role still enables us to separate the bad from the good in practice. The obvious solution to the 'hoarding culture' of museums today: display more! The British Museum, for instance, only displays around one percent of their collection. A welcome change is the opening of museum storerooms, allowing objects to be appreciated in isolation against their totality, which has brought new depth to the museum not seen since the advent of the special exhibition in the sixties. The Victoria and Albert (V&A) Museum leads the way here with the opening of the V&A East Storeroom in May this year. The Storeroom offers unparalleled access to the V&A's collection in an uncompetitive manner while placing conservation, education, and access to our material history at the forefront. This new, unique development could transform the museum entirely, allowing us to engage with our material history as never seen before. Such a change is mere months away and holds the potential to bring us closer to our culture.

You Must be Some Kind of Superstar

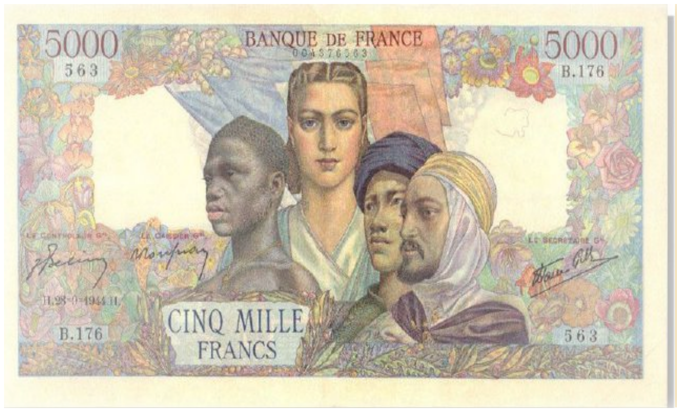
Today, AI-driven education in India is designed not just by IThe question thus becomes not 'what's behind the glass' but rather how we interact with what's behind it–the museum's collection and the museum beyond the glass.

Picture hordes of visitors swarming Da Vinci's Mona Lisa or Michaelangelo's David. Both are situated in superstar museums, namely the Louvre and the Galleria dell'Accademia, where visitors must see behind the glass. Such museums are unique in their expectation to provide a 'total experience' beyond the conservation and presentation of the collection. Increasingly this is a commercial experience even when diametrically opposed to the museum's conservationist essence. The museum becomes an amusement or entertainment park existing beyond its collection and the works in its collection, where visitor experience reigns supreme.

The risk of the 'superstar' museum is that one work often shines so far above the rest–competing with, diminishing, and othering the rest of the collection as visitors flock like moths to snap a photo. The single work is a monolith and sucks attention away from the soul of the museum, limiting the experience it can offer. Such an experience can be devastating! It leads to a dull museum where visitors struggle to gain much from the experience. The cultural impact and legacy of the museum cannot shine through when distilled to just one work.

The museum thus has to compensate – works in a superstar museum cannot 'speak for themselves';extensive efforts must be made to improve interpretation or educational resources around the collection. Competition thus extends beyond the value of the collection, the traditional indication of museum demand, to a point where experience is crucial. This applies not only to superstars, but also to smaller museums, which must adapt and offer more or be left behind. It is true for the core museum as well as the gift shop and café, positioning the museum as an economically innovative force.

The museums which visitors will get the most from are those which can provide a 'total experience' in interpretation complementary to the material and immaterial heritage. In short, it is logically the museum who best captures the heart of the visitors that will most succeed.



The Institution and the Visitor

The glass door guarding entry to the museum, the glass display case showcasing the collection, and the drinking glass of the café, all represent the three most crucial components of the modern museum. The question of experience – how the visitor can derive the most from the museum – has never been more important than today. This is an economic question we can only encourage further study within.

The light of the museum may at times appear flickering, as art budgets are repeatedly slashed, and the arts' importance is bashed. But this should be a call to action to save our culture, is the basis of our enriched lives! To study our museums economically and focus on the ever complex and empirical question of how culture is experienced is our only route to a glorious summer of culture with sweeping blue skies ahead. Our position, that once seemed blasphemous, must be treated as imperative in creating a thriving community with arts and culture at its core. We must recall, once again, the seminal lyrics of Joni Mitchell:

Don't it always seem to go
That you don't know what you've got
Till it's gone?
Joni Mitchell, 'Big Yellow Taxi'

The Literary Resilience of Edinburgh

*In this article, **Parthivee Mukherji** explores Edinburgh's enduring relationship with literature and the arts, examining how the city has leveraged its cultural identity—from the post-war emergence of the Fringe Festival to its post-pandemic recovery—to drive social and economic resilience.*

Throughout history, societies and economies have sought out art, literature, and cultural events to navigate and recover from devastation. Edinburgh, with its rich cultural heritage and commitment to creativity, stands as a testament to the power of culture and resilience of literature, cultivating optimism and growth. From the havoc created during World War II to the economic crises of the COVID-19 pandemic, Edinburgh has continuously turned to its artistic traditions to replenish and rejuvenate itself and its people. This article explores how the city has leveraged its cultural identity to foster social and economic recovery, particularly focusing on the Edinburgh Fringe Festival, the world's largest arts festival.

Fringe, Festivals, and the Future

The Second World War left Scotland grappling with rapid industrial decline, widespread unemployment, and displacement. Under these austere conditions, Edinburgh sought renewal through culture.

In 1947, amid the devastation of war, the Fringe Festival emerged as an unorthodox yet strong act of defiance – unfailingly reviving and rejuvenating the country. Initially a fringe movement in its truest sense – it started as an unsanctioned addition of the Edinburgh International Festival and quickly became a bulwark of creativity and artistic freedom. The Fringe is a three-week festival of performing arts that takes place in Edinburgh every August. Its story dates back 77 years ago, when eight theatre groups turned up uninvited to perform at the Edinburgh International Festival. Since then, it has burgeoned into a global phenomenon – now showcasing over 2,000 shows with more than 32,000 performances – garnering in more than 2.2 million ticket sales in 2023 alone. The impact on local businesses during the festival seasons is substantial, with hospitality, retail, and service sectors experiencing a surge in revenue.

The Edinburgh Festivals play a crucial role in the economy, generating thousands of seasonal jobs in event management, hospitality, and retail. In 2022, they supported approximately 7,150 full-time equivalent (FTE) jobs in Edinburgh and 8,500 across Scotland. Year-round, Edinburgh's cultural sector supports an estimated 13,000 jobs, encompassing roles in theatre, museums, publishing, and creative industries. Beyond direct employment, the festivals stimulate a multiplier effect, amplifying economic benefits across the city. The Edinburgh Festivals collectively contributed £407 million to the city's economy in 2022, with visitor spending on tickets, accommodation, dining, and transport significantly boosting local businesses. This festival, born out of resilience and resistance, has enriched Edinburgh's cultural landscape – placing the city at the helm of all artistic affairs.

Moreover, the Fringe has become a model for other cities seeking to harness their cultural assets for economic and social recovery.

The synergy between the Fringe and the city's literary identity is undeniable. Edinburgh has always been a haven for literary figures, with its echoes of Sir Walter Scott, Robert Louis Stevenson, Muriel Spark, and other prominent literary personnel alike. The festival, with its ceaseless innovation, provides a platform for playwrights, poets, and novelists to experiment, network, and hone their craft. Many seminal works, such as Phoebe Waller-Bridge's Fleabag, first found voice on the Fringe stage before transcending into global literary and cinematic success. Notably, over 600 new writing productions were staged at the 2023 Fringe, emphasising the Festival's role as the nest for fresh literary talent.

Beyond the Fringe's enigmatic performances, visitors dally around the cobblestoned streets – rich with the air of romanticism, immortalised fiction, treading the historic footsteps of the literary noble. Bookstores brim with eager hands thumbing through the crisp pages of works inspired by the city, while the Edinburgh International Book Festival provides yet another avenue to engage with the rich literature. The festival-driven influx of global audiences enhances the city's prestige as a UNESCO City of Literature, bolstering its publishing industry, academic institutions, and creative economy. The city has been an enduring muse for generations of writers, its landscape and history woven into pages and pages of literature. The Edinburgh International Book Festival, a literary jewel in the city's cultural crown, serves as a nexus for authors, readers, and literary minds. In these spaces, literature is not merely consumed but interrogated, debated, and reimagined, ensuring that Edinburgh's literary flame continues to burn bright. In 2023, the festival attracted over 250,000 visitors and hosted more than 600 authors from across the world.

When the Curtain Dropped

The Covid-19 pandemic and resulting lockdown profoundly and unprecedentedly impacted the Edinburgh International Festival and wider cultural sector. With countless creative and artistic roles and businesses on the precipice of redundancy or bankruptcy, the cultural sector faced an existential threat. In any normal year, Edinburgh International Festival employs over 350 people including core, freelance and seasonal staff in the staging of the Festival and contracts a further 200 suppliers.

With the cancellation of the 2020 Festival, the majority of those people lost their engagement, meaning the negative economic impact was spread widely across Edinburgh and the cultural sector within the UK.

As physical spaces shuttered, digital avenues flourished. The Fringe and its literary counterparts adapted, embracing virtual platforms, streaming performances, and hosting hybrid events. Writers, actors, and poets reimagined storytelling, proving that art is not bound by physical constraints but flourishes through reinvention. In 2021, over 400 digital performances were made available through the Fringe's online platform, demonstrating the festival's adaptability in times of crisis.

While global cultural hubs like Paris and New York faced similar challenges in revitalising tourism and the arts, Edinburgh's recovery strategy stood out for its focus on festival reinvigoration, sustainable tourism, and digital adaptation. Paris allocated €2 billion for the arts, heavily subsidising artists and venues, whereas Edinburgh relied on hybrid festival formats, smaller grants, and community-driven initiatives. In New York, Broadway's full reopening in 2021 signalled a strong cultural comeback, supported by state-backed funding and major private investors. In contrast, Edinburgh, lacking a comparable private arts sector, prioritised grassroots initiatives and local cultural entrepreneurship.

The UK Government's support during the COVID-19 pandemic was critical in preserving Edinburgh's cultural heritage. The Scottish Government launched the Culture Recovery Fund, distributing over £1.57 billion to help theatres, museums, and creative enterprises. Additionally, The Edinburgh Festival Fringe Society received £1.3 million in public funding to support artists and venues, ensuring the festival's return in 2021 and beyond. The UK-wide furlough scheme also protected thousands of jobs in Edinburgh's hospitality and cultural sectors during lockdowns, allowing businesses to restart operations post-pandemic. Unlike global cities that relied on large-scale private investment, Edinburgh's post-pandemic recovery has been festival-driven, government-supported, and innovation-focused.

Art in Uncertain Times

During moments of political uncertainty, such as the Scottish independence referendum (2014) and Brexit (2016), Edinburgh's artistic and literary communities have played a crucial role in voicing the public opinion. The 2014 referendum on Scotland's independence from the UK galvanised Edinburgh's cultural sector, as artists, writers, and performers engaged deeply in the political discourse. Brexit – Britain's decision to leave the European Union – sparked deep anxieties within Edinburgh's cultural sphere. The Edinburgh International Book Festival became a key site for discussions on post-Brexit cultural policy, with EU authors and Scottish intellectuals debating the impact on artistic collaboration.

In moments of crisis, Edinburgh's cultural sector serves as both a historical archive and a site for imagining alternative futures.

More Than a Festival

Edinburgh's cultural resilience sparks the narrative of renewal. From the post-war advent of the Fringe Festival to modern-day adversities like the COVID-19 pandemic, the city has harnessed the strongest tool in its shed perfectly – its cultural ingenuity.

Its legacy as a UNESCO City of Literature, its unwavering commitment to cultural entrepreneurship, and its embrace of sustainable artistic practices ensure that its creative economy will continue to thrive. As the world copes with shifting economies and social landscapes, Edinburgh stands as an indelible testament to the enduring, regenerative power of literature and the arts in shaping a hopeful future.

Beyond the Algorithm

The Future is Human: Redefining Progress in the Age of AI

***Freddie Acott** challenges the narrative of AI dominance, revealing why human ingenuity, adaptability, and soft skills remain our greatest assets—and why investing in people, not just machines, will define the future.*

The Spark of Innovation:

The Industrial Revolution, which began in Britain in 1750, laid the foundation for much of the technology we rely on today. Yet, amid these advancements, we often forget what made it all possible: us. To be precise– human ingenuity.

Over time, our collective contributions have driven progress, yet a tendency to downplay them has allowed power and wealth to concentrate in the hands of a privileged few. By downplaying human ingenuity, we risk handing control of progress to corporations, governments, and tech elites — those who own the innovation rather than those who create it. Recognising our role in innovation is essential to ensure that technological and economic progress benefits everyone, rather than serving the interests of an elite minority..

In an age of AI and automation, skepticism about human ability is misplaced. From Silicon Valley to Davos, leading technology innovators are increasingly acknowledging what makes humans uniquely capable and essential to progress. This not only enables us to retain the outcomes of the future in our own hands but ensures civic society does not become second to machines. With this renewed emphasis, progress remains in the hands of the masses, not just elite technocrats, ensuring a much brighter future.

Bluer Skies Ahead

As artificial intelligence becomes more prevalent in daily routines within the corporate world, the need to hire workers equipped to navigate technological challenges rises. Even tech giants now recognise that skilled, adaptable workers are crucial to fully utilise new innovations. Investing in human talent – once seen as secondary to cutting-edge machines – is now being accepted as a fundamental strategy for success. This shift underscores the belief that human creativity and resilience remain indispensable, even as automation reshapes the future of work. For example, AT&T, the world's largest telecommunications company, has invested over $1 billion into reskilling programs, including a 'Digital You' initiative to improve digital literacy and teach new skills in AI, cloud computing, and data analytics. Similarly, IBM's 'SkillsBuild' platform offers free access to digital training courses worldwide. As companies strive to stay competitive and workers seek high-paying, secure roles, embracing this transition is crucial.

Methods of production have developed alongside economies. The transformative link between labour and capital can be explained by economic theory– investment in new technology and automation is often driven by the pursuit of greater efficiency and productivity, and this has undoubtedly been achieved. Since the 19th century, global per-capita real productivity has increased by more than 2% annually, far exceeding the 0.1% gains seen in centuries prior. These advances promote economic growth, with the potential to benefit entire societies if distributed equitably. Automation also frees up human time for more complex, creative roles, fostering the birth of new industries. While constant evolution is beneficial, the capital-labour substitution created by automation can present challenges, particularly if workers aren't properly prepared for the shift. A balanced approach, with proactive leadership, is necessary to navigate this change. More than ever, research and experimentation are occurring in this realm, painting bluer skies ahead.

Beyond surging demand, mining firms are also exploring downstream integration, particularly in the United States. New business models feature onsite mineral processing and nearby value-added production, allowing mining companies to capture up to 39% of battery production revenue. Many are also considering onsite battery recycling, which could expand revenue further.

Saved by a Personality

What sets humans apart from machines are soft skills—traits like creativity, empathy, and adaptability. These uniquely human qualities cannot be replicated by machines. The emotional intelligence, critical thinking, and social skills that humans possess are indispensable, particularly in roles that require human connection or problem-solving. At the World Economic Forum in Davos, global leaders identified coordination, people management, and negotiation as the most important skills for the future. These soft skills will only grow in value alongside technological advancement and will secure the place of humans as essential players within the economy. The nurturing of both new and pre-existing skills is rising, particularly through online microlearning platforms. These platforms, which exploded in popularity during the Covid-19 pandemic, offer accessible avenues for individuals to develop creative, digital, and business-related skills. With labour markets constantly evolving, these resources ensure that learning never stops, helping to maintain competitiveness in today's workforce.

One of the most understood outcomes of the pandemic might be the value of human interaction. Communities came together to support one another, proving a world dominated by machines is a fantasy for a few billionaires, not a reality for the majority. The skills being nurtured today are predominantly digitally focused, and while digital literacy needs expansion, there is also a need for greater emphasis on vocational training. By placing people at the heart of progress, we are not just preparing for the future—we are shaping it. From where we stand, the skies ahead have never looked bluer.

No Strings Attached: The Promise of Unconditional Cash Transfers

Frederick Graham explores the merits of unconditional cash transfers in comparison with other forms of traditional development aid.

Speaking alongside then-President Obama to raise funds for those affected by the 2010 Haiti earthquake, George W. Bush famously quipped, 'I know a lot of people want to send blankets or water... just send your cash.' His remark cuts to the heart of the ongoing debate: how can we most effectively deliver aid? Foreign aid once enjoyed widespread political support but is now under siege – dismissed by critics as inefficient, corrupt, even useless. To ensure aid not only continues but transforms lives, we must rethink how it is delivered.

Cash, not Cabbages

The rise in prominence of unconditional cash transfers (UCTs) – where individuals receive direct payments without restrictions on usage – has the potential to improve aid effectiveness and thus aid's legitimacy. UCTs contrast sharply with traditional forms of development aid, which comes in two main forms: financial aid to developing governments and in-kind aid where goods, equipment, and technical assistance are provided directly. Traditional aid models are prone to inefficiencies: financial aid is susceptible to corruption and government mismanagement, while in-kind aid is often misaligned with local needs and can prioritise short-term relief over long-term sustainable development.

UCTs seek to solve these inefficiencies by bypassing intermediaries and sending money directly to individuals, which allows them to choose how to spend their assistance. GiveDirectly, a leading UCT non-profit, typically gives $1,000 to each receiving household. This is often spent on essential improvements such as installing water access, expanding high-school enrolment, and providing farming assistance. UCTs prove to be more efficient as they allow recipients to select goods that would benefit their households the most, rather than the predetermined, ill-suited aid.

A Hand Up, Not a Handout

While UCTs improve individual livelihoods, their broader economic impact is a subject of debate. A common argument against large-scale cash transfers is the risk of inflation. Nobel Prize-winning economist Milton Friedman famously claimed that inflation is 'always and everywhere a result of too much money, of a more rapid increase in the quantity of money than in output.' Under this logic, wide-scale cash transfers to a region

would not lead to increased living standards, as the rise in money supply would outpace the ability to increase output that comes from the cash injection.

Friedman's analysis contrasts with the Keynesian belief. Here, aid would act as an economic multiplier, increasing total output beyond the initial injection. Keynesians argue that an economy can operate below full capacity in the long run. In an economy at full employment, a monetary stimulus can boost output without a large increase in inflation.

Keynesianism in Kenya

A large, randomised control test was conducted with 10,500 poor households receiving one-off $1,000 payments across 653 villages in rural Kenya. Inflation and consumption levels were recorded and compared with villages that did not receive payments.

The findings of this study challenge inflationary fears. Inflation in treated villages did not surpass inflation in untreated villages. Even high-intensity treatment areas – regions where a higher percentage of villages were treated – had similar inflation levels to low-intensity areas. Medium-term economic growth (after 30 months) showed that overall GDP in the Kenyan regions increased by $2.50 for every $1 given in aid. The Kenyan study – along with similar studies in related countries – provides empirical evidence that UCTs bring a large benefit to recipients.

No, They Won't Waste It

Independent evaluations from GiveWell, a non-profit which reviews academic evidence and research to identify the most cost-effective charities, highlight the effectiveness of UCTs. The organisation states that 'cash transfers have the strongest track record we've seen for a non-health intervention.'

Moreover, the Agriculture & Applied Economic Association disagrees with the narrative that recipients of cash transfers are wasteful; their evidence suggests that recipients do not reduce their labour time or work effort. Instead, transfers are used to 'improve household income-generating activities.' Simultaneously, reports from the World Bank counter the narrative that cash transfers will be spent on temptation goods such as tobacco and alcohol.

Unconditional cash transfers not only empower recipients but stimulate economic growth with far fewer inefficiencies than traditional methods. As humanitarian organisations, including the UN Development Program, and policymakers increase their use of UCTs, they are redefining the future of global development – making it more effective, empowering, and truly transformative.

Low-Tech Energy for a High-Tech Future

***Benjamin Patrick** provides a comprehensive overview of an energy source thoroughly overlooked by Malthusian environmentalists and energy abundance advocates alike: woody biomass.*

The coming era will be one of exponential technological acceleration; technology observers expect artificial intelligence and quantum computing will soon radically transform many aspects of human life – for the better. The evidence suggests these advanced computing technologies will spur rapid innovation on a massive scale, requiring immense electricity consumption. Economic analysts believe these trends, combined with the electrification of everything from stoves to school buses, will sharply increase western electricity demand in the coming decades. Any country that wishes to achieve technological and economic advancement must first develop the necessary cheap and reliable electricity sources to do so without adding carbon dioxide to the atmosphere.

The Intermittent Folly

Wind turbines and solar panels are not up to this task at their current technology levels. On top of the high-costs associated with building them (even after preferential regulation and subsidies), they cannot be fully relied upon. Their highly intermittent nature makes mainstreaming their use complex: wind turbines have met as little as 10% and as much as 60% of Britain's entire electricity demand in the last three months alone. The two most common solutions to this problem are building enough battery storage or backup 'peaker plants' to meet the entire country's energy needs.

Battery storage requires a significant amount of financial and physical resources: research finds that if Britain were to adopt a wholly intermittent grid, the required batteries would take up all existing land space on the island. Furthermore, peaker plants come at a high cost - the infrastructure needed for their required rapid output adjustability would double the price of their electricity. This raises the logical question of if a stable energy resource is required to back up renewables, why not invest directly in "baseload" energy– sources that provide constant and reliable generation.

The Green Phoenix

There exists an energy source which is carbon-neutral, "baseload," and cheap even without regulatory and subsidy favor, that has been thoroughly overlooked by Malthusian environmentalists and energy abundance advocates alike – woody biomass.

The idea behind woody biomass is simple: burn timber instead of coal, oil, and natural gas as we do now. It's worth immediately noting that biomass attracts controversy because it emits carbon dioxide, however; complaints about this are misleading given that the life cycle of a tree is, to use familiar terminology, 'carbon neutral.' Trees store CO2 throughout their lifetimes and then release it while decomposing. Since a new tree can be planted where another once stood, timber is a renewable resource, prompting its inclusion in the EU Renewable Energy Directive. Whatever emissions that may exist at the point of combustion would inevitably occur regardless, so putting them to use is the economical thing to do if it is market competitive cost-wise.

And luckily, it is; the cost of woody biomass electricity in the US, where the industry is larger, is about 9.5p/kilowatt-hour, and could be as low as 4.7p/kWh with modern technology and a less restrictive regulatory environment. For reference, electricity prices in the UK average about 25p/kWh.

Additionally, the heat produced by biomass plants can be captured and used as heating for industrial processes and residential/commercial buildings, a practice which is already commonly used in many countries. As wealthy Western countries attempt to 'reshore' various heavy industries in response to global geopolitical uncertainty, access to cheap industrial heating will be invaluable. Moreover, as trees grow virtually everywhere in great abundance, they are a geopolitically safe fuel source that won't require The West to risk an overreliance on complex supply chains or unfriendly adversaries to get them.

Woody biomass is also capable of delivering the 'just transition' desired by so many environmentalists. Disused coal plants can be repurposed for biomass power generation, which reduces upfront capital costs and thereby electricity prices for businesses and households. The power generation itself requires many full-time power plant operating staff, not to mention the loggers, truck drivers, and timber processing plant staff needed to source the wood. That is to say, the industry is well-suited to integrate displaced jobseekers from nonrenewable industries.

Western countries are at a crossroads: domestically, will they bend the knee to misleading policy orthodoxies and retrenched special interests or choose sensibility and abundance? Abroad, will they choose the 'cheapest option' in the name of economic efficiency, or accept that the stability and continuity assumed by neoliberal economic modeling is increasingly threatened? Energy policy will be a bellwether of which path the west decides to take, and woody biomass is the source of energy best fit to its current environmental, economic, and geopolitical predicament.

3, 2, 1...Scotland's Off!

Edinburgh has emerged as the 'Space Data Capital of Europe,' leading Scotland's space revolution through research, industry collaboration, and sustainable innovation. ***Satvik Singla*** *explores how the city is shaping the future of space exploraton and economic growth.*

Edinburgh, the 'Space Data Capital of Europe,' drives Scotland's space revolution. The city is at the forefront of a sector that is reshaping not just Scotland's economy, but the global space landscape. The numbers tell a compelling story – Scotland's space sector has grown faster than that of any other region in the UK, with industry revenue skyrocketing by 65% over the past decade to an annual £2.6 billion. By 2030, this figure is projected to hit £4 billion, solidifying the country's position as a key player in the global space economy.

The Heart of Innovation: Edinburgh's Academic and Industry Ecosystem

Edinburgh's space economy thrives on a positive synergy between academia and industry where space data fuels sectors from climate tech to smart infrastructure. At the forefront of this collaboration is the Bayes Centre at the University of Edinburgh, a leading Space Innovation Hub that has attracted over £11 million in project funding since its inception. Here, some of the world's brightest minds are developing new ways to harness satellite data for climate monitoring, urban planning, and disaster response—turning Edinburgh into a global powerhouse for space-based analytics.

But it is not just academia that is driving the city's dominance in the space sector. Edinburgh boasts a thriving ecosystem of over 180 space-related companies and startups, all working at the cutting edge of satellite technology, data analytics, and Earth observation. With major investments pouring into Edinburgh's space technology firms, the city is emerging as a launchpad for the next generation of global space pioneers.

Investing in the Future

Edinburgh's growing space sector is not just a technological success—it is an economic powerhouse driving job creation and significant investment into Scotland's economy. Currently, over 8,500 Scots work in space-related roles with Edinburgh at the forefront. If projections hold, this workforce will surpass 40,000 by 2030, creating thousands of high-value jobs in space technology, engineering, and data science.question of whether consent even exists in the first place is a poignant one.

Scotland's space manufacturing alone contributes £529 million annually, representing nearly one-third of the UK's total Gross Value Added from space manufacturing. Edinburgh firms like Skyrora and Orbex lead in satellite launches and sustainable space tech, making the city a global space innovation hub.

Strategic investment plays a key role in this expansion. The Scottish Space Strategy outlines a roadmap for Scotland to become a global leader in satellite manufacturing, launch services, and data analysis, prioritising sustainability and innovation. Over £50 million has been allocated to developing critical space infrastructure, including the UK's first orbital launch sites at SaxaVord in Shetland and Space Hub Sutherland, the world's first carbon-neutral spaceport. This bold step cements Scotland's role as a leader in sustainable space innovation. The Scottish National Investment Bank further supports startups, enabling them to scale and commercialise innovations that will define the future of space. These targeted investments are aligned with Scotland's ambition to achieve a £4 billion share of the global space economy by 2030.

Leading the Way in Sustainable Space Innovation

While the space industry is often associated with limitless possibilities, sustainability has become a critical focus. Edinburgh-based organisations are actively working on solutions to reduce space debris and minimise the environmental footprint of satellite launches. Innovations in green rocket fuels—capable of cutting carbon emissions by up to 90%—are being developed right in the city, while new satellite designs prioritise responsible end-of-life disposal strategies to prevent growing space junk.

A Cosmic Future

Edinburgh's emergence as a central force in Scotland's space sector is a testament to its unique blend of academic excellence, industrial innovation, and strategic policy backing. As it pioneers cutting-edge space technologies and sustainable solutions, the city isn't just keeping pace with the global space race—it's setting the trajectory. With blue skies ahead, Edinburgh's space economy is ready to soar.

Case Studies

Photographed by Zainib Ishtiaq

Edinburgh's Post-Brexit Bounce

***Shifa Ali** traces Edinburgh's economic recovery, highlighting how diversification, innovation and sustainability have contributed to the city's strength.*

Edinburgh's economy has evolved over the past decade and a half, particularly in the wake of Brexit. The city has faced significant economic challenges but has demonstrated remarkable adaptability, transitioning into a leader in finance, tourism, and sustainability.

2016: Brexit's Immediate Economic Impact

The immediate aftermath of the 2017 Brexit referendum saw the pound depreciate by 15% against the dollar, creating uncertainty in consumer spending and investment. The resulting increase in the cost of imported goods, particularly for those priced in dollars, was passed on to consumers, eroding household purchasing power and curtailing discretionary spending. Simultaneously, businesses faced heightened operational costs and an increasingly volatile market environment, prompting delays in investment decisions.

Edinburgh's financial sector, which employs over 100,000 people, was heavily exposed to the risks associated with Brexit. Major firms faced potential loss of access to the EU market, necessitating strategic reassessments. In response, financial institutions sought to mitigate uncertainty by expanding into alternative markets, while local firms pivoted towards non-EU trade partners, accelerating Edinburgh's transition towards a more globally diversified financial centre.

2017-2019: Adjusting to New Realities

Between 2017 and 2019, Edinburgh came to adjust to its evolving economic landscape. The financial sector turned its focus beyond Europe, expanding into North America and Asia. Investment firms in the capital increased their presence in Asia by launching region-specific funds, forging partnerships with financial institutions in China and Japan, and opening offices to better serve clients in high-growth economies. In North America, Edinburgh-based asset managers secured mandates from US pension funds and institutional investors, capitalising on demand for UK expertise in wealth management.

Despite declining EU enrolments, Edinburgh's universities maintained their global standing by building stronger ties with institutions in North America and Asia. The property market also saw shifts, with foreign investors capitalising on a weaker pound to invest in Edinburgh's commercial and residential properties. This put upward pressure on property prices, particularly in sought-after areas such as New Town, Stockbridge, and the West End. Furthermore, the hospitality sector adapted by targeting non-EU markets, ensuring resilience in tourism despite Brexit-induced challenges.

2020-2021: Dual Crises

The combined impact of Brexit and the COVID-19 pandemic in 2020 placed greater strain on Edinburgh's economy. The tourism sector, previously generating £1.6 billion annually, saw a dramatic 72% drop in international visitors. Meanwhile, hospitality and retail industries also suffered, with many businesses reporting revenue declines of over 50%.

However, it was not all bad; the financial sector expanded into digital and sustainable finance, whilst businesses turned to technology-driven solutions to adapt to remote work and global trade disruptions. Universities evolved by strengthening global partnerships and enhancing online course offerings. Edinburgh remained a research powerhouse, securing international funding and fostering collaboration beyond Europe.

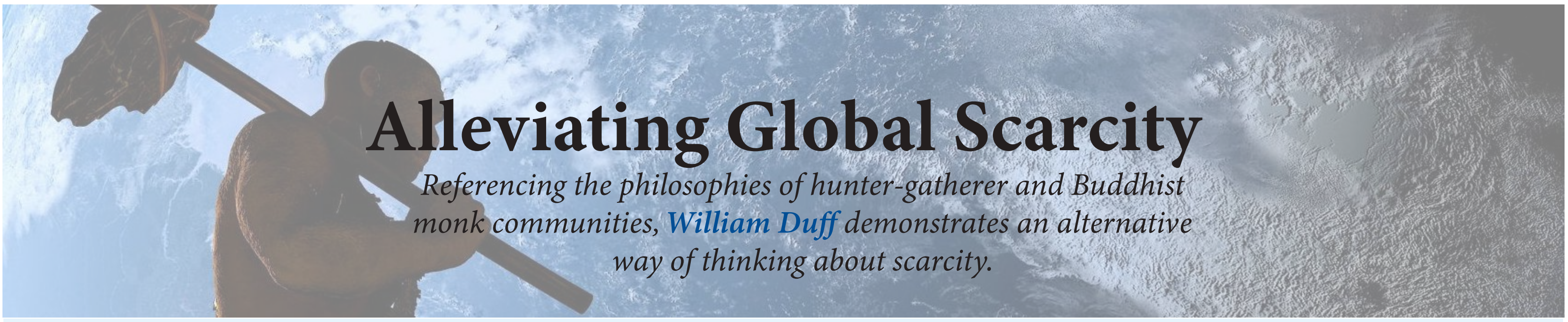
2022-2024: Recovery and Growth

By 2022, signs of economic recovery appeared. The financial services sector solidified its role in sustainable finance, with ESG-related investments growing by 20%. Tourism rebounded by 15%, driven by demand for sustainable travel and eco-tourism. The city's commitment to eco-friendly initiatives and abundant green spaces bolstered its appeal to environmentally conscious travellers. Meanwhile, higher education institutions expanded their international student base, with enrolment from Asia and the US increasing by 10%. More specifically, the University of Edinburgh played a leading role in attracting international students, whilst also strengthening its sustainable development and public health research, to reinforce Edinburgh's academic reputation.

A Future of Innovation and Sustainability

As Edinburgh continues to navigate the post-Brexit era, its economic outlook remains resilient. The financial sector, now managing over £2 trillion in assets, has firmly positioned itself as a leader in sustainable finance, driving investment in ESG-focused initiatives. Tourism, while still recovering, is undergoing a transformation towards greater sustainability, with eco-friendly policies enhancing the city's global appeal. Foreign investment in Edinburgh's property market remains strong, supporting economic growth as well as shaping the city's evolving urban landscape.

These post-Brexit transformations highlight Edinburgh's ability to adapt and thrive, reinforcing its status as a dynamic hub for finance, education, and sustainable innovation. By embracing economic diversification and international cooperation, the city has positioned itself well for continued success in an increasingly uncertain economic environment.



Alleviating Global Scarcity

*Referencing the philosophies of hunter-gatherer and Buddhist monk communities, **William Duff** demonstrates an alternative way of thinking about scarcity.*

Economists such as Lionel Robbins have cemented scarcity as a universal truism by making assumptions on human nature and the natural order. Scarcity has become a condition under which we are all subject, the result of living with unlimited material aspirations in a world that can only provide limited resources. This short article provides a critique of scarcity in this formalist sense, proposing that scarcity can be alleviated under certain societal conditions with positive implications to economics, giving way to blue skies ahead. The hunter-gatherer way of life as well as that of the Buddhist monk will evidence this claim by showing that human needs are not always insatiable, and our resources are not always fixed in the formalist understanding.

My Wants, My Needs

The 'Original Affluent Society' by Marshall Sahlins dismantles the assumption that scarcity is inevitable through the prism of hunter-gatherers like the Kalahari !Kung and Arnhem Aboriginals. One key observation brought forward by Sahlins is that the wants and needs of hunter-gatherers are strictly limited by the need to stay mobile. The tendency for nomadic hunter-gatherers to carry possessions on foot means that the desire to accumulate unnecessary items never developed, as Sahlins puts it, 'utility falls quickly at the margin of portability'. As a result, nomadic hunter-gatherers form different understanding of material welfare from that of a sedentary society: they value smaller possessions over large ones, prefer to use simple equipment, exhibit disinterest in acquiring replicas and avoid constructing substantial homes. Every possession must justify its weight, and the weight that a hunter-gatherer is willing and able to carry is strictly limited.

Furthermore, resources are not seen as limited from the perspective of a hunter-gatherer. Nature will always provide a bounteous supply of goods, easily acquired if you have the wherewithal. For a hunter-gatherer, one's environment is the giver of all things: a supermarket, employer and landlord combined. The centrality of the natural world to hunter-gatherer life then creates an expectant view on nature as a replenishing provider rather than a dwindling stockpile. Accounts of hunter-gatherers record evidence of this mindset: feasts are held when big hunts are landed, food is rarely stored for the future, sanguine attitudes prevail even in hard times. Rather than looking upon nature as a fixed stock, hunter-gatherers see their environment as perpetually replenishing.

Hunter-gatherers therefore reject the formalist definition of scarcity with their strictly limited wants and needs, and resources which do not deplete in the long run. Under these conditions, material scarcity is reduced and arguably gives way to abundance.

A Bowl, A Belt and A Razor

Buddhist monks wage a more spiritual revolution. Monks following traditions such as Theravada and Mahayana further challenge the formalist definition of scarcity by making strict vows of Nekkhamma, renunciation. These vows involve the rejection of all personal property and the adoption of a strict limit to one's possessions set out in the Vinaya Pitaka. The total wants and needs for millions of Buddhist monks living today can be laid out in a short list: three robes, an alms bowl, a belt, and a razor. The wants and needs of Buddhist monks are certainly not infinite.

For Buddhist monks, the generosity of their neighbours is enough to satisfy their needs. Food is typically obtained through the offering of alms (gifts of food) from the local community in exchange for lessons and blessings. Buddhist monks, in the pursuit of spiritual betterment, reject both cupidity and production, demeaning the formalist definition of scarcity. Buddhist monks live frugally in protest of unchecked desire, disparaging the formalist assumptions on scarcity, particularly that material wants and needs are insatiable.

Both hunter-gatherers and Buddhist monks challenge the formalist understanding of scarcity through their lifestyles. Both groups live with constrained wants and needs, breaking the assumption that unlimited material lust is inherent in all humans. Additionally, these two groups consume those resources which replenish, augmenting the assumption that planetary resources are fixed. Scarcity persists today not because our resources are dwindling, and our aspirations stretch to infinity. Scarcity is persistent because we define it so, and great advances could be made by redefining scarcity as just one end of a spectrum also containing satiation and abundance. This redefinition is not only more realistic, but it would emphasize both human desire and environmentalism as critical fields in the study of economic welfare. Modern minimalist, degrowth and environmentalist movements are already putting the ideas of asceticism and sustainability into practice. By restraining wants and needs and securing a flow of resources into the future, these groups are already working to alleviate scarcity and ensure bluer skies ahead.

From Crisis to Growth: A Case Study of the PIIGS Post Eurozone Crisis, a Lesson for Northern Europe?

In this challenging period for the British economy, Gabriel Pais Gaspar explores the lessons to be learnt from the recovery of the PIIGs.

Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough. This alarming speech by Mario Draghi in 2012, then governor of the European Central Bank, aimed to reassure financial markets concerned about the Eurozone's sustainability. Originating in Greece, the Eurozone crisis spreaded across other periphery European economies including Ireland and Portugal, before reaching big names such as Spain and Italy (termed the PIIGS).

Despite fear of economic chaos, a Grexit, and a permanent economic depression, these economies have experienced a remarkable transformation in economic prospects. For example, Spain was the fastest growing major economy in the OECD (exceeding the US) in 2024 and Portugal was one of two Eurozone economies to see fiscal surpluses and Greek unemployment is at record lows. A case-study of the transformation of Southern European economies provides hope that despite economic malaises facing other nations, sustained long-term economic growth is still possible with rigid economic policy. With the newly elected Labour government desperately seeking economic growth in Britain, studying the recoveries of economies such as Spain, Portugal and Greece may help Kier Starmer and Rachel Reeves in steering the UK towards a healthier economy.

The Eurozone in Crisis

The collapse of Lehman Brothers in 2008 and the wider financial crisis caused by the downturn in the US subprime mortgage market quickly spread to Eurozone banks. European banks – largely from Northern Europe – were heavy lenders for southern European economies, particularly after the introduction of the Euro. These banks called in debts to cover their losses, resulting in mass bankruptcies across economies which were already grappling with the economic fallout of the Great Recession. Governments were forced to bail out a range of institutions, most importantly banks such as the Banco Espirito Santo in Portugal, leaving high levels of public debt prevalent across the affected economies.

Market panic was triggered when the Greek government revealed its fiscal deficit was much higher than previously reported. The deficit stood at 15.4%, rather than the 12.5%, resulting in credit rating agencies downgrading Greek debt and investors dumping it en masse. Bond vigilantes, now anxiously studying the debt burdens of other Eurozone economies, turned to other weakened European economies such as Portugal, Ireland and later Spain and Italy. The Greek debt crisis had by then spread to the rest of the Eurozone, threatening to collapse the monetary union. Greek 10-year bonds peaked at ~36% in 2012, threatening the economy with bankruptcy and economic ruin. This upheaval in bond markets, worryingly mirrors recent volatility in British gilt markets following the so-called mini budget of 2022. The subsequent Eurozone bailout scheme, designed to save Southern European economies from crashing out of the Eurozone or facing national insolvencies, prescribed harsh fiscal cuts and economic reforms to affected economies. Referred to as the troika, some of these policies were so unpopular that Greek Finance minister Yanis Varoufakis referred to it as terrorism transforming Greece into a debt colony.

Painful Medicine – Troika Austerity

Initially, the policies prescribed by the IMF, the ECB and Northern European creditors involved unpopular austerity and structural reforms. Most radically, this involved a 32% reduction in public expenditure within Greece – triggering mass unemployment and a deep recession. Greek GDP in nominal terms has yet to recover to its pre-2008 peak. While the harshness of austerity measures, particularly in Greece, are heavily debated amongst economists, it is a matter of fact that bailed out economies have all regained international investor confidence as a result of these measures. Meanwhile, established Northern European economies such as the UK and France, are increasingly victim to nervous bond investors.

The PIIGS' remarkable turnaround in investor confidence is evident in the sharp decline of Greek and Portuguese 10-year bond yields, which once spiked to crisis levels but have since steadily converged toward those of Britain, France, and Spain. Alarmingly, British 10-year bonds now exceed those of Greece and recent political instability in France has resulted in rising borrowing costs compared to those seen for the Spanish or Portuguese governments. These

falling bonding yields reflect the reduced debt burdens, rising economic growth and primary budget surplus' across Portugal, Spain and Greece.

As Britain scrambles to increase defence spending and Rachel Reeves contemplates breaking her own fiscal rules (despite recent tax hikes), Portugal has announced tax cuts for all citizens under the age of 35. These contrary fiscal positions demonstrate the extent to which fiscal discipline is rewarding in the long run.

Structural Reforms – Lessons for Britain?

In Spain and Portugal, reforms to liberalise Labour markets have made wages less sticky. Essentially meaning employers have greater power to lower wages, sack workers and extend working hours. In the years 2011-2015 this resulted in high levels of unemployment, especially amongst Spanish youth (peaking at 56.1%), high levels of emigration and falling wages. However, proponents of the Troika reforms will argue it has resulted in the increased competitiveness of the Iberian economies with labour markets fit for the twenty-first century. Both economies have jumped up the OECD export competitiveness rankings. This is reflected in the rapid export growth both economies have experienced – Spanish exports tripling since 2010. Furthermore, Portugal has witnessed its employment rate reach a record high of 72% in 2024, despite global trends post-covid towards falling employment rates – as has occurred in Britain and the US.

Other reforms, including to the Iberian Energy market have resulted in a green re-industrialisation. In 2023 Spain alone received the highest amount of green energy investment in the world, a remarkable achievement for the world's 15th largest economy. This has been accredited to a streamlined, open approach towards FDI as well as a deregulated planning process. Due to this investment, which has reduced dependence on Natural Gas, Spain and Portugal now have the lowest energy costs within the European Union. The Iberian energy market, therefore, serves as an example for Britain's new government. While reforming and expanding Britain's outdated energy market may result in significant local opposition, given its potential to re-industrialise and level up much of the country it is an opportunity we cannot miss. Changes could include relaxing planning controls regarding the energy grid, for example by allowing Scotland to maximise its vast generation of Wind Energy and export to the rest of the UK. Thus, demonstrating the great opportunity the carbon transition offers Britain.

More than a Lads' Holiday

The surge in tourists visiting bailed out economies such as Spain, Portugal and Greece has also supported their rapid economic recovery since the crisis. In July 2024 alone tourism revenues accounted for over 12 billion Euros in Spain. The standard economic benefits of tourism are well documented, with foreign tourists increasing domestic consumption, stimulating demand and employment. However, another underrated benefit of tourism is the increased international awareness of destinations, greatly enabled by social media. Portugal and Spain have been at the forefront of the digital nomad revolution, being the first to introduce digital nomad visas. This has resulted in cities such as Lisbon and Madrid becoming European start-up centres for a range of firms specialising in technology or financial services. Both cities have successfully attracted talent from South America as a result of linguistic ties, but equally importantly from countries such as the US or UK. This has famously included Goldman Sachs opening an office in Malaga, Spain for employees looking for a different lifestyle. This demonstrates the unique role tourism has had in increasingly FDI and high-skilled immigration to Portugal, Spain and Greece. UK government policy should aim to mirror this, encouraging tourism in Britain's great historical towns and cities – ideally outside of the South East – to support the government's 'levelling-up' pledges.

An Opportunity to be Grasped

The fact that in 2012, Greece, Portugal, Ireland and Spain were, in essence, shut off from global capital markets, but in 2024 are bastions of European economic growth is nothing but an economic miracle. Demonstrating that implementing tough fiscal and structural reforms to an economy successfully encourages sustainable long-run growth – as is sought after in the U.K. With a government serious about sustained economic growth and committed to structural reforms and fiscal discipline there is no reason why Britain too shouldn't be able to transform its economic prospects.

Photographed by Edan Webb

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