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The President



Dr. Susan R Hilton M.B. Ch. B., DRCOG, MA, FPPH
President 2018-

President's Report

It has been an interesting second year of my Presidency of the Manchester Literary and Philosophical Society, and I pay tribute to all the hard work and dedication of the different Sections, their committee members, the members of Council, and especially to our very hard-working and professional staff, Rachel Croft and Aude Nguyen Duc. It has been an especially challenging year, due to the Covid-19 pandemic, causing major alterations to the way of life for all, which includes the changes which the Society has had to introduce in order to continue to fulfil its role and mission. As the Society has been in existence since 1781, it is crucial that despite all the difficulties, we survive and find ourselves able to carry on with all the educational and social activities with which we are so strongly associated.

Members of the Council put in so much time and hard work for the Society, and these are - Vice-Presidents Chris Baker and Tony Jackson, who have provided invaluable information, advice and support, as have the Honorary Secretary Peter Hilton and the Honorary Treasurers Trevor Rees and Greg Mauchline. We were all very sad to lose the Chair of the Young Peoples' committee, Angus McDougall - he gave so many years of dedicated hard work to the Lit & Phil, but sadly died in March of this year. We hope to celebrate him in a more formal fashion once we are allowed to have such gatherings. An obituary has been placed on the Lit & Phil website meanwhile.

The Section Chairs - Desmond Winterbone (Science and Technology), Patricia McWilliam-Fowler (Arts), Peter Barnes (Social Philosophy), and Angus McDougall (Young Peoples) (as of May 2020 the new Chair is Peter Whitaker) have all run their committees efficiently, and provided the lectures for each section in good time, and are very advanced into the planning of more for the next season - and beyond. Prof Graham Booth has produced another set of Manchester Memoirs, which is available free to all members online, and the book is full of very interesting and detailed information about the Society's activity over the previous year. Elected Council Members Chris Boyes, Ronald Catlow, Joanna Lavelle, and Kenneth Letherman have all contributed ideas and practical help in many ways. We also thank Christine Chappelle, our honorary librarian, for all her hard work with the archives and artefacts held at the Society Offices, and the research she has done with the external queries about the Society which we regularly receive.

Throughout the 2019-20 season there have been a great number of lectures, several seminars, and some extra-mural visits. Due to the

pandemic, and the consequent nationwide lockdown we had to cancel/postpone all of these from mid-March 2020 onwards but hope to be able to offer many of these during the coming seasons. The YP section did host our very first online live event on 20 May – in the form of a Question and Answer session between Dr. Kirstie Whitaker and a Year 13 pupil from Withington Girls' School, Tea Milanovic, followed by questions from those watching, and it proved very successful. We hope to repeat this format during the next season, and to perfect the IT needed for such events. Indeed, as I write this in early July 2020, we now have a full online timetable for the 2020 Michaelmas term.

The 2019 AGM was held on 27 September, followed by a fascinating talk from Professor Des Winterbone, Chair of the Science & Technology Section. See the summary of the Council lectures as described in another part of the Annual Report, along with the summaries from all the sections regarding their own lectures and events, as well as the ongoing programme for the 2020-21 season, as far as we can plan at the moment. The quality and depth of each event was universally high, in keeping with the ongoing tradition of the Lit & Phil. As we approach our 239th year since the Society was founded (in 1781), the events planned for the coming term (Michaelmas) promise to be of the same high standard, and we shall be holding these every 2 weeks. This is the result of the hard work of each of the Sections, and I thank each Section Committee for their continuing enthusiasm and time. Our two administrators, Rachel Croft and Aude Nguyen Duc, have continued to provide an excellent and professional service to the Society, with many innovative ideas. Their marketing experience, IT skills, and many other talents have helped the Lit & Phil to run even more efficiently, and we are very grateful to them for all they do for the Society. It has been especially challenging since the lockdown commenced in March, as they have worked from home since then. We currently retain our office space in Church House, which also contains our archives and artefacts, and we have no current plans regarding this, due to the uncertainty about the Covid-19 pandemic. The latter has caused much difficulty with our usual venues, the Royal Northern College of Music (RNCM) and Manchester Conference Centre (MCC) which have remained closed since March, and no certainty as regards re-opening, especially in a 'Covid-secure' way, so we await further news from them as far as 2021 events go. We have also had to pause any extra-mural events for now.

Thanks also go to Malcolm Brown (a member of the Lit & Phil) who has given me much help in the organisation of the Council Lectures, along with Chris Boyes and David Brailsford. Malcolm has also

President's Report

efficiently facilitated our new strategic planning group, which has been meeting regularly for over a year, formulating the strategic aims of the Society for the 5-10 years. We have paused this temporarily and are now looking at short-term strategy, to take us through the next year, when we hope to see more clearly what the future holds. Several strategic plans have been made in the last 17 years, but many restrictions, mainly financial, and lack of time (we are volunteers, after all) have meant that many aspirations have been unachievable. Also, there remains an increasing number of societies and organisations who have similar events to ours, which are providing competition. The role of social media is an increasingly important factor, and we are trying to keep up with this as much as possible. During the pandemic, the role of online working and transmission of arts, and much information has increased dramatically, and this will remain with us for the future – though the Society will be still wanting to present ‘live’ lectures, where members can also socialise, in much the same way as before March 2020. Social activities are very important for many of our members, and until March we continued to arrange an evening meal after most lectures, to which about 20- 30 members, on average, had attended. Just before Christmas 2019 we had a members’ ‘drop-in’ at the Council offices, where members and staff got together for refreshments and drinks. And you will see from the summary of the Council lectures and events that a very enjoyable musical evening was held at the RNCM just before Christmas 2019.

Last year we organised a survey of members’ opinions, and since then we have repeated this, with two additional survey soon after the pandemic started. We have looked carefully at the comments of and have tried to respond to as many of these as are practical. We value comments and suggestions at any time of the year, of course.

The Treasurers have continued to review the Society’s finances and regularly report on these at each meeting of Council. They regularly review our investment portfolio with our investment advisers, Brewin Dolphin, and report their findings to Council. The Society continues to be funded by the investment income, along with members’ subscriptions. Total membership numbers have fallen slightly this year, and Council is continuing to look at ways to reverse this trend, whilst giving members value for their subscription fees. There was, however, an increase in paying members (in the past, the entire first year of membership was free, now this applies to the first academic term only), which more than compensated the Society’s funds. We also have ongoing applications from new members and are hoping to attract more, especially with an aim to be more diverse.

Looking to the future, I am sure that Council and the Section Committees will continue to produce excellent topics and lecturers, of interest to many of our members. We encourage any member who wishes to take part in a committee to put their names forward. The Constitution of the Society dictates the tenure of office of each section and Council member, and this is continually reviewed. Professor Graham Booth, our Manchester Memoirs editor, continues to produce an excellent record of the lectures given in a particular year. Again, I thank him for his tireless work on this, as well as our Honorary Librarian, Mrs Christine Chappelle, who continues to sort and catalogue our archives on a weekly basis throughout the year, so, many thanks to her.

Termly brochures were composed during 2019-20, and this will be continued. Digital information is much more to the fore, though we are very aware that some members are unable to access this, so postal versions are also produced. Every month a Newsletter goes to members, updating them on current lectures, events and other news. Since March we have also had a regular 'eLit&Phil' available on the website, with a theme to each, and several links to interesting books, videos, podcasts, and much more, to keep members interested and informed. A Society Forum has also been set up where members can place comment, ideas, and interesting topics they have come across – very useful, especially to those who have been self-isolating. The website is at www.manlitphil.ac.uk, and contains full information about the present and past activities of our Society.

Finally, I wish to thank all our loyal members for their continuing support of this great Society, and hope that membership will continue to be renewed – as well as all new members who have joined during the last season.

Dr. Susan R Hilton M.B. Ch. B., DRCOG, MA, FPPH
President 2018-2021

*What the charity of the Middle Ages has
to teach Bill Gates and Mark Zuckerberg*

*A lecture to commemorate the 600th anniversary of the
foundation charter for Manchester Cathedral*

PAUL VALLELY

3 March 2021

*"Owre kyng went forth to Normandy,
With grace and myyt of chivalry;
Ther God for hym wrouyt marvelously,
Wherefore Englonde may calle, and cry
Deo gratias: Deo gratias Anglia redde pro victoria."*

AGINCOURT CAROL ¹

On 25 October 1415, on the Feast of St Crispin, the English army won a decisive victory over the French in the Hundred Years War (1337–1453) at Battle of Agincourt. The English army, led by King Henry, famously achieved victory in spite of the numerical superiority of their opponents. The spirit of the English monarch's campaign had been partly inspired by the figure of St George of Antioch, whose cult had been revived in the crusades. 'Cry God for Harry, England and St George,' as Shakespeare had it. In the battle, which the English King should probably have lost, his adversaries – the French knights who had been defeated by the English longbow – had carried the flag of St Denys.

Six years later, King Henry granted a charter for a new collegiate church here in Manchester. It was to be dedicated to The Virgin Mary, St Denys and St George. The two saints, who had been set as adversaries on the field of battle, were now joined in England's newest ecclesiastical institution, symbolising the joining of the two countries after the treaty of Troyes. The church, which went on to become the Cathedral of Manchester, was to be put in the charge of a cleric of the name of Thomas De la Warre – who, notwithstanding his Norman ancestry, had distinguished himself at the battle of Cressy. In the new institution a chapter of priests were to say chantry masses daily for the English king. It is from this era that the distinctive medieval quire of the present cathedral had its origin.



Figure 1. King Louis IX washes the feet of the poor, Scenes of Christian charity, Le Livre des faits de Monseigneur Saint Louis (1214–1270), 15th century. Bibliothèque Nationale, Paris. Getty Images.

What the charity of the Middle Ages has to teach Gates and Zuckerberg

The collegiate church suffered under the depredations inflicted by Henry VIII. Its chantries were discontinued and its plate confiscated. Worse still under his son, the boy king Edward VI, in the college was dissolved. But a second royal charter was granted by his successor Mary Tudor – re-establishing the church as “The College of the Blessed Virgin Mary in Manchester”. A third charter later came from Queen Elizabeth I who renamed it The College of Christ, and a fourth charter came under Charles I in 1635. But let us not get ahead of ourselves in this story.

§§§

Half a century before this collegiate church was founded, by the authority of both King Henry V and Pope Martin V, a long epic poem had been published entitled *The Vision of William, Concerning Piers the Plowman*. Today, now known simply as *Piers Plowman*, the poem stands in the shadow of Chaucer’s *Canterbury Tales* as the second most famous work of medieval English literature. But in its day it was a political force to be reckoned with.

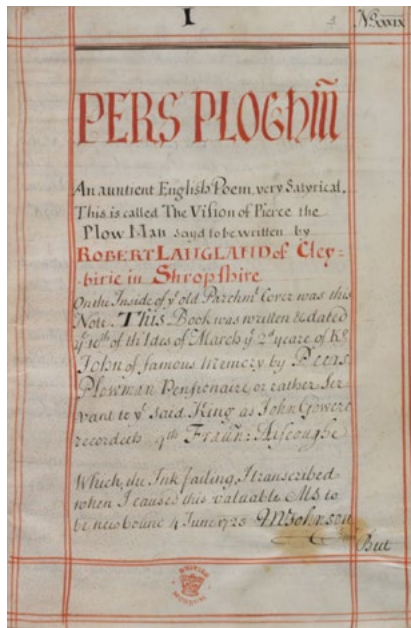


Figure 2. William Langland, *The Vision of Piers Plowman* (C version), c1382 with 16th, 17th and 18th century additions, Add. MS 35157, f.7r. British Library

Piers Plowman, by William Langland, appeared in its earliest version around 1362. It embodied both a vision of the ideal society and a satirical commentary on how far contemporary English society fell short of that. The ideal society Langland envisaged comes in the form of the advice which Truth gives to the merchants of the day. It is that they should give from their profits to charity. They were to repair hospitals; mend roads and bridges; provide dowries for maidens (or make them nuns); feed the poor and those in prison; send boys to school or find them apprenticeships; and relieve poor friars, monks and priests.

But Langland also in the poem offered a caustic satire protesting against the clerical and state abuses of the fourteenth century. In this Langland may well have been inspired by his contemporary, the reformer John Wycliffe, who translated the Bible from Latin into Middle English and protested against the wealth, luxury and worldliness of the clergy in a era when medieval popes became powerful temporal rulers, as well as spiritual leaders, and got entangled in the politics of the continent. Langland depicts the church as corrupt and riddled with abuses such as the sale of indulgences by a clerical hierarchy anxious to fund grandiose churches, and to subsidize a sometimes decadent clerical lifestyle. *Piers Plowman* had a deep impact upon its time and became a rallying cry for change during the Peasants' Revolt of 1381.

Two centuries later the poem was to resurface as a potent political actor when it was revived by Protestant propagandists at the Reformation. Where fourteenth-century reformers such as Langland and Wycliffe called for the internal reform of the Church, their sixteenth century counterparts instigated a Church schism. Martin Luther too hated abuses but he saw the root of the problem not in the frailty of individual priests but in a corrupted theology of redemption and grace which had been engendered by priestly venality. Luther's initial call for reform turned into a rupture which split the Church and the whole of Western Christendom. Something fundamental shifted in Christian charity in the process, as we shall see.

Piers Plowman, which two centuries earlier had circulated in manuscript form, was now in 1550 published as a book by a Protestant pamphleteer and printer named Robert Crowley. He didn't just reprint it. He deleted parts of the original to downplay its Catholic characteristics, and added a preface and marginal notes. Crowley converted the poem into a powerful Protestant screed against the Roman Catholic hierarchy. He emphasized its clarion call for a reforming monarch who would purge corruption from the religious orders. This turned the fourteenth-century poem into a piece of sixteenth century anti-papist propaganda and harnessed its

vision to the rhetoric of reformers demanding ecclesiastical, social and political change.²

So successful was Crowley in this enterprise that the poem's summary of the kinds of activities which constituted charity actually found their way into the Preamble of Elizabeth I's Statute of Charitable Uses of 1601. This too set out an approved list of those activities which the state wished to encourage: relief of aged, impotent and poor citizens; maintenance of sick and maimed soldiers and mariners; schools of learning, founding of schools and support of scholars in universities; repair of bridges, ports, havens, causeways, churches, sea-banks and highways; for the education and preferment of orphans; supplying and maintaining houses of correction; assisting poor maids to marriage; supporting young tradesmen, handicraftsmen and 'persons decayed'; the relief or redemption of prisoners or captives, and contributing to appeals by the monarch to raise armies.

According to a lawyer of the time, Francis Moore, the aim was to simultaneously relieve poverty and also reduce the burden on local parishes imposed by the poor-relief legislation passed in the same year. This list of charitable activities the state wished to encourage reveals something of the priorities of Elizabethan political, economic and social policy – with the building and maintenance of prisons on a par with building schools – and the upkeep of bridges, ports, havens, causeways, and highways on a par with the building of churches. Assisting the poor to pay their taxes for the raising and equipping of the queen's army is a very singular idea of charity to modern ears. Despite that this definition of public charity was to endure for centuries. It was only removed from English law in the 1960s. And over the intervening centuries, English case law, when considering whether or not a particular purpose is charitable in law, has tended to look for an analogous precedent in the list first encoded by the medieval poet and then promoted as a piece of religious propaganda.³

But something crucial was sacrificed in all this. It was something central to the entire tradition of charity which had developed and become enshrined in a thousand years of Christendom, from the 4th century to the 14th. After the Reformation Protestant polemicists felt themselves obliged by the dynamics of schism to declare that charity in the medieval Catholic period was inefficient, haphazard and even merely nominal. The reality was rather different.

§§§

As early as 150 AD The Shepherd of Hermas – a text which, in its day was accorded the same authoritative status as the gospels and epistles had set

out what became a characteristic Christian attitude to the relationship between the rich and the poor. It insisted that the rich must minister to widows, orphans and the destitute. And the poor must pray to God on behalf of the rich – because God more readily hears the intercessions of a poor man. This, says Hermas, will bind rich and poor in a symbiotic relationship; what he described as being “like a barren elm tree around which is entwined a fruitful vine”.⁴ Then, in 386 AD Ambrose, Bishop of Milan, wrote the first great work on Christian charity. It set out to synthesize the Graeco-Roman vision of philanthropy – as a top-down activity shaped by the very rich – and the more two-way communitarian vision inherited from Judaism; significantly the Hebrew word for charity, *tzedakah*, is the same as the word for justice. It was the Jewish tradition of social justice and two-way philanthropy which set the template for a thousand years of Christendom. The notion was crystallised in the writings of another 4th century Church Father, Basil of Caesarea – St Basil the Great – who spent his own fortune to relieve a terrible famine in his homeland the fourth century. He insisted that giving was no longer merely a matter of honour, status, civic duty, or even emulation of God’s generosity: it was a matter of justice.

The idea, which dominated the Christendom millennium, was enshrined in the work of Gratian, a monk from Bologna. Around 1140, in the height of the 12th Century Renaissance – which was the highpoint of a medieval civilisation which, until recently, was unjustly dismissed as the Dark Ages – Gratian created a great systematisation of the Christian inheritance. It brought together the teachings of Clement, Basil, Ambrose and the other Church Fathers with the canons of the great Church Councils, and the decrees of popes across a thousand years. Justice in wealth was key to it.

It was a teaching from which no-one in Christendom was exempt. Feudal society trapped serfs and peasants in lives of economic hardship but religion created a spiritual bond between giver and receiver. The rich had a duty to give, and the poor had a duty to pray for the salvation of the souls of their benefactors. There was thus a mutuality and reciprocity between those who gave and those who received.

All Christians were cosmically united in a spiritual body with Jesus Christ as their head. “So we, being many, are one body in Christ, and everyone members of another”, as St Paul put it. The medieval theologians, citing Augustine, called this the Doctrine of the Mystical Body.⁵ It meant that charity must be more than mere altruism. Giving alms, Aquinas declared, was “a deed whereby something is given to the needy, out of compassion and for God’s sake”. Charity was not divisible



Figure 3. The Decretum, Gratian, Arundel MS 490 12th century MS, British Library

from justice. And neither could be separated from the cosmic unity of the entire world. Church thinkers like Gratian systematised rules on giving from which none were exempt.

There was far more to this than a pious theory. It had practical implications. For a thousand years, from the 4th to the 14th century, giving was extensive throughout Europe, motivated by a shared Christian faith. Charity was institutionalised in a system of tithes. Parishes distributed alms. Monasteries offered hospitality for travellers, nursed the sick, and cared for widows, orphans and the destitute. Mediaeval charity was also implemented through guilds and confraternities, almshouses, hostels and hospitals, casual giving to beggars and substantial donations and bequests by the growing mercantile classes. Practical philanthropy was extensive throughout the Middle Ages. Monarchs, like Louis IX of France in the 13th century were still personally washing the feet of the poor. That was the worldview and practice which held sway at the time this cathedral was granted its first charter.

§§§

What put an end to this widespread medieval charity was the Black Death. The Black Death changed everything. During the great bubonic pandemic of 1347 to 1351 a third to half of the entire population of Europe was wiped out. Pious sects whipped themselves in the streets to ask God to end the plague. To no avail, as *Piers Plowman* records. The earliest version of the poem was written within a few years of the end of the first wave of the plague.

Prayers have no power to prevent these plagues
 God is deaf now-a-days and deigns not to hear us.
 But grinds the guilty into the ground.
 And yet the worldly wretches are not warned by one
 another...
 Nor portion their plenty with the poor, as pure charity prefers,
 But in gaiety and in gluttony guzzle their good things
 And break not their bread with the beggar, as the Book
 beseeches...⁶

All this came at a point when big changes were already under way in medieval society. Improved techniques of agriculture had created surpluses of food and wool for trading. The rise of the merchant classes brought the growth of towns. The economy became more monetary. But the Black Death accelerated the breakdown of feudal society. With fewer people to farm the land, land was abandoned as serfs and villeins went on the move in search of work or food. The nobility enclosed more

What the charity of the Middle Ages has to teach Gates and Zuckerberg
land, for profitable sheep-grazing, forcing more serfs from their home areas. The poor were no longer unfortunate individuals, manageable in number in the eyes of the authorities. Some had been liberated into a new impertinence, as *Piers Plowman* again records:

Labourers who had no land, but live by their own hands,
Deign not to dine these days on leftover cabbage.
No penny-ale may please them, nor piece of bacon.
But only fresh flesh or fish, fried or baked.⁷

But others were not so empowered. A tide of vagabond beggars swept across Europe provoking a change in attitude of the rich towards the poor. These destitute vagrants became objects of disdain and fear throughout Europe. In England this was swelled by thousands of soldiers discharged at the end of every campaign during the Hundred Years War. The fear of 'sturdy beggars' and 'reckless marauders'— combined with a psychological association between poverty and plague – led to an increasing tendency to blame the poor for their own misfortune.

That change in attitude was to persist for centuries. In many ways it is still with us today. With the poor now seen as a threat to social order, the civic authorities began in the 14th century to take control of the business of poor relief.

The rise in the merchants created a new class of benefactors and new vehicles for philanthropy. The medieval guilds, which grew in power primarily to protect the interests of groups of craftsmen also made widespread contributions to public projects and the relief of the poor. So did the increasingly powerful councils of the growing towns. In Florence, a rich silk merchant, Felice Brancacci, commissioned frescoes in his family chapel showing 15th century Italian merchants with the apostles distributing alms⁸. The laity rather than the clergy were now in charge of charity.

Some Protestant historians claimed this change was to do with the Reformation. But the most recent scholarship is that throughout the early 16th century new systems of poor relief were put in place all across Europe in Catholic and Protestant cities alike in response to common economic and demographic factors. If there was any new intellectual stimulus it came not from Protestant theology but from humanists like Erasmus, Thomas More and Juan Luis Vives, who in 1526 published the most influential humanist tract on public philanthropy which became the blueprint for the governance of many European cities, Catholic and Protestant, in the period.

Though a Catholic theologian, Vives begins his *De Subventionem Pauperum* (on the support of the poor) by quoting Cicero rather than



Figure 4. Fresco by Masolino da Panicale from the Brancacci Chapel, Chiesa di Santa Maria del Carmine, Florence, 1425. Getty Images.

Christ to argue that the state has a duty to provide some level of financial relief for the poor. Vives's radical humanism inspired and directed many of the innovations of early modern poor relief.

But the lay authorities also developed a punitive approach to the poor. The infirm might still need help, but the 'idle poor' were now seen as in need of correction. A succession of poor laws under each monarch from Henry VIII onwards sought to achieve this. These new attitudes of suspicion are evident in book published in 1566 by an Elizabethan country magistrate, Thomas Harman. It carried the cautionary title *A Caveat or Warening for Common Cursetors Vulgarely Called Vagabones*. The frontispiece shows a convicted beggar being tied to a cart and whipped through the streets. The book is a taxonomy of Harman's 24 classes and categories of rogues, vagabonds and fraudsters in Elizabethan society. Philanthropy from this point came to be as much about social control as public or private compassion. After the Elizabethan Poor Laws came the

What the charity of the Middle Ages has to teach Gates and Zuckerberg

Poor Relief Acts of 1662 and 1691, the Workhouse Test Act of 1723 and then the Victorian Poor Law of 1834. All tightened controls on the poor. A disdain for the pauper was implicit in much 19th century charitable moralising. It was overt in the innate superiority of Andrew Carnegie, the man who set the model for 20th century philanthropy. Top-down philanthropy was to triumph after Andrew Carnegie became the richest man in the world. Carnegie, a Scottish immigrant to America, made an unprecedented fortune in the railway, iron and steel industries. In 1901 he sold up and turned to full-time philanthropy.

§§§

Carnegie was a follower of the English Victorian philosopher Herbert Spencer who applied Darwin's theory of evolution to human society. It was Spencer, not Darwin, who invented the phrase 'survival of the fittest'.

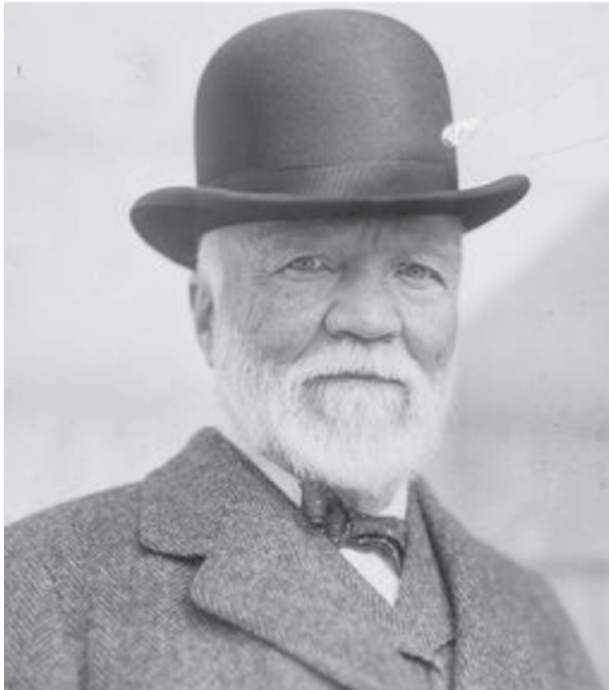


Figure 5. Andrew Carnegie (1835–1919) 'Portrait upon Return from Trip to Europe', New York City, Bain News Service, October 1913. Getty Images.

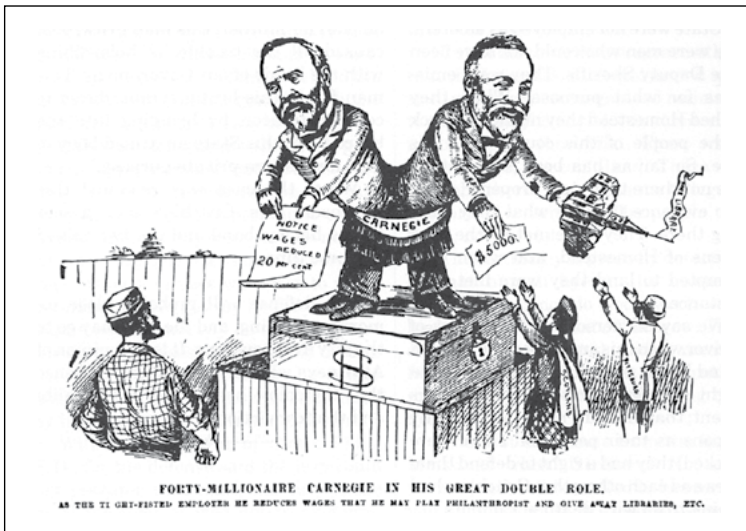
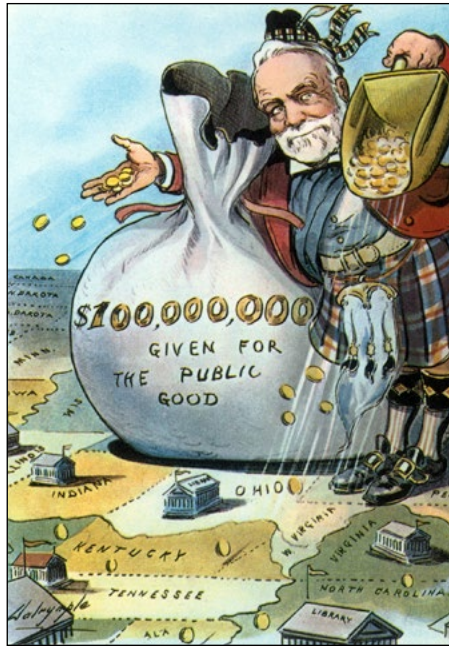


Figure 6. Two contemporary views of Andrew Carnegie. Pro-Carnegie cartoon from Puck magazine, 25 July 1903 (Alamy) and anti-Carnegie cartoon from The Saturday Globe, Utica, New York, 9 July 1892 (Getty Images)

What the charity of the Middle Ages has to teach Gates and Zuckerberg

In the United States Carnegie and a new class of mega-rich ‘robber baron philanthropists’ embraced Spencer’s Social Darwinism, using it to declare that the rich were innately superior to everyone else – and better suited than politicians or ordinary people to decide how their money should be spent, in an era before income tax. Give money to the poor and they will just waste it on drink, Carnegie declared. Philanthropists know best, was his creed.

Andrew Carnegie set out his philosophy in 1889, as he approached the age of 60, in an essay in the *North American Review* entitled Wealth. Rhetorically it declared that ‘the ties of brotherhood may still bind together the rich and the poor in harmonious relationship’ but in practice it was a philosophy which lauded inequality.⁹ The former British prime minister William Gladstone read it and was sufficiently impressed to arrange for its publication in London in the *Pall Mall Gazette* where it was headlined The Gospel of Wealth – a title Carnegie himself later adopted for the work.

What was radical about Carnegie was that he called on his fellow billionaires to give away the whole of their fortune in their lifetime hand. His giving was on an unprecedented scale, building 3,000 libraries, parks, art galleries, museums and concert halls all around the world. But Andrew Carnegie did not just Give Big, he set a new template for philanthropy. Carnegie shifted philanthropy away from the relief of poverty and towards causes like the arts, cultural infrastructure and elite educational institutions. He called all this “ladders upon which the aspiring can rise” which was great for the aspiring but didn’t do much for the vast bulk of the poor who were left behind. Among their number were Carnegie’s own steelworkers, whose wages the magnate had repeatedly cut. When one group went on strike Carnegie’s managers sent in a private army and a conflict ensued in which a number of his workers died. That is why Carnegie’s giving inspired responses which were both laudatory and highly critical. And Andrew Carnegie made another massive change. He established the first philanthropic foundation. He made philanthropy more business-like in its methods.

It is an approach which has been emulated by today’s mega-givers including Bill Gates, Warren Buffett and Mark Zuckerberg – all of whom share the same data-driven, command-and-control approach to giving. All want to apply business methods to social problems full of confidence that they can find the solutions which until now have eluded the public, private and charitable sectors.



Figure 7. Mark Zuckerberg and Priscilla Chan with their first child Max. photograph courtesy of Mark Zuckerberg, [facebook.com](https://www.facebook.com)

The Facebook boss Mark Zuckerberg and his paediatrician wife Priscilla Chan have gone further. In 2015, to mark the birth of their first child, the couple pledged to give away 99 per cent of their Facebook shares – then worth \$45 billion, now worth double that – in the biggest act of philanthropy in world history. Their aim they said, was “preventing, curing or managing” all the world’s greatest diseases. The ambition of philanthropy today apparently knows no bounds. Yet the Zuckerbergs did not set up a traditional charitable foundation to do it. Instead they used more opaque financial models – a limited liability company and secretive donor-advised funds. Will these be more efficient vehicles for better philanthropy, as they claim. Or will they just be new methods of plutocratic manipulation? It is too early to tell.

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They call all this new style of giving: Philanthrocapitalism. The subtitle of the first book in praise of it was: “How the Rich can Save the World”.¹⁰ This new style of philanthropy is data-driven and measurement and metrics-obsessed much like the businesses which have brought an extraordinary accumulation of wealth among West Coast tech titans and the so-called masters of the financial universe. Their aim is to take

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the secrets and techniques they used to build their business empires – and applying them to philanthropy. They therefore seek to improve the efficiency, effectiveness, capacity and accountability of charity through hardnosed strategy, performance metrics and cost-benefit analysis. They see their benevolence in terms of an investment, targeted at a specific problem to which they can bring a specific solution.

This has brought hitherto unthought-of sums to philanthropy as these billionaires use their wealth and political influence to leverage even larger sums. The role of philanthropy in public life has increased dramatically over the past two decades. The scale of this giving is enormous. The Gates Foundation alone has a bigger budget than do 70 per cent of the world's nations. And there are now more than a quarter of a million charitable foundations throughout the world. Between them they control more than \$1.5 trillion.

The upside of this is clear. The wealth, drive and business acumen of tech titans like Bill Gates has brought huge benefits for humankind. Polio once paralyzed a thousand children every day. But cases have been cut by 99.9 per cent worldwide thanks to 2.5 billion vaccinations funded by Gates.



Figure 8. Bill Gates administers an oral polio vaccine at a clinic in New Delhi. Getty Images

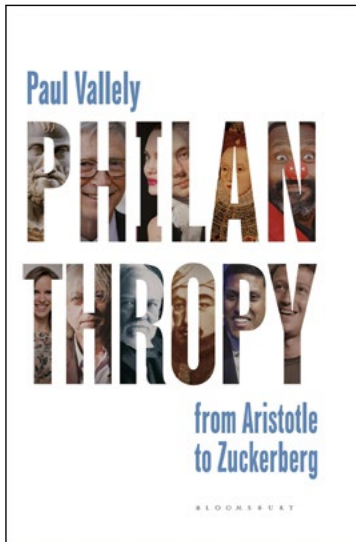
Gates is the great exemplar of the new philanthrocapitalism which is rooted in the philosophy of Effective Altruism – the idea that good can be measured using data and statistics. The Gates Foundation spends more annually on global health than does the government of Germany. Gates's first big grant for malaria research in one sweep nearly doubled the total amount of money spent on the disease worldwide. Bill Gates has made a major contribution in the race to get five of the Covid vaccines into production – including the Pfizer. He commissioned 100 million doses of the Oxford/AstraZenica vaccine to be produced by the world's biggest vaccine manufacturer, in India, for distribution in the developing world at just \$3 a shot.

The successes of this strategic strain of philanthropy are self-evident – but it has its downsides too. Bill Gates spent \$2 billion on 2,600 high schools serving nearly a million poor and ethnic minority students. But a few years into the project Gates suddenly concluded that the approach was misconceived. The funding was abruptly ended before many schools had been given the chance to demonstrate any improvement. Mark Zuckerberg made a similar \$100m miscalculation on an education project in New Jersey. To the philanthropist it was a few lost billions. To the children it was years of jeopardised education.

Gates has been open to many of the same criticisms in his health work in the developing world, though over the years he has shown signs of learning from his mistakes. Much of that has been thanks to his wife Melinda Gates who has been very much an equal partner in the Gates Foundation. While her husband takes a data-led approach, her attitude is more people-oriented. What she has taught him is that great technical solutions are no good if you can't persuade people on the ground to buy into them.

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Strikingly Melinda Gates is a practising Catholic, deeply rooted in the practical outworking of a century of Catholic Social Thought. It is not, I think, fanciful to read into her approach some remnant of what the modern world lost when it relegated medieval ideas like the Doctrine of the Mystical Body of Christ to the dustbin of history. She stands in a significant alternative tradition of philanthropy – which began with the Ancient Hebrews and can be traced through medieval almshouses, Enlightenment activist philanthropists like the penal reformer John Howard and the anti-slavery campaigner William Wilberforce, and into the industrial era with the proto-socialist Robert Owen or Quaker paternalists like the Cadburys, Frys and Rowntrees. It is a tradition which



has seen philanthropy emphasise the dignity of the recipient, creating a sense of mutual respect between those who give and those who receive. It does not look merely for problems which need solutions, it asks those burdened by problems for the best answers, and seeks to build a more harmonious society. It is what in my book I call Reciprocal Philanthropy in contrast to the philanthrocapitalists' Strategic Philanthropy.

One reviewer suggested that my conclusion in the book is that Reciprocal Philanthropy should replace Strategic Philanthropy. That is not correct. What the book advocates is a rebalancing between the two. We

need a philanthropy which operates with the head and the heart, which takes account of the data on best practice but is driven by values which are empathic. Charity should be rational and disciplined but it should be open to intuition. It should cease to be top-down and become two-way, respecting the experience of those at the grassroots who often see solutions which elude the billionaire philanthropist with his helicopter view. It should cease to treat recipients as contractors who are there to discharge the donor's wishes and treat them as partners. It should be bottom-up as well as top-down. It should be about quality as well as quantity. It should be open to learn and to change. It should be rigorous without being rigid. It should respect the experience and wisdom of those on the ground. It should remember that some outcomes are not measurable on a materialist abacus.

This is not to suggest that the world needs to revive 12th and 13th century Catholic scholastic philanthropy. Aquinas and his fellow theologians and philosophers were men of their time. In modern terms they were deeply conservative. The medieval canonists took social hierarchy for granted and found a rationale for it. God had intentionally placed the rich and the poor in their respective positions, Aquinas believed, to encourage them to cultivate different virtues – generosity on the part of the rich and patience for the poor. Structural poverty was simply accepted as an inevitable part of the order of things. Indeed, to Aquinas one of the evils of the gap between rich and poor was that it

threatened equilibrium of the spiritual and social unity of Christendom.¹¹ To modern eyes the medieval worldview can seem myopically focused on maintaining the feudal system by making it more just and kinder, rather than reforming or replacing it. It was treating the symptoms rather than the disease itself.

Yet the medieval canonists in the age in which this cathedral was founded understood things the modern world has forgotten. They focused as much on the position of the beneficiary as on the ethics of the benefactor. Aquinas saw that “material alms can be more valuable... than spiritual alms”. He said that “a hungry person should be given food rather than taught philosophy” or offered moral correction. The teaching of Aquinas and his fellows offers a number of important lessons of which modern philanthropy needs to be reminded. When they said that almsgiving was an act of love, they were not articulating some sentimental impulse; they were insisting – using the word ‘love’ in its broadest Christian perspective – that almsgiving is essentially an act of justice. As the great medievalist Brian Tierney puts it: “The neighbour might be personally repugnant – the poor often are – but he [is] nonetheless entitled to affectionate respect and help in need for the sake of Christ.”¹² This reduced excessive humiliation on the part of the recipient. Charity was designed to promote not just the wellbeing of the individual recipient but the wellbeing of the whole of society. The ethic of charity criss-crossed medieval society in a network of expectations and obligations which brought social cohesion, peace and order. The intrinsic human dignity of the poor was to be respected: ‘the poor man is an honourable person’ – an insight which has been lost by many nowadays.

The medieval canonists understood that charity could be abused but they did not assume, as nineteenth-century reformers came to do, that abuse was routine and embedded in human nature. There will be from time to time periodic abuses, Aquinas concedes, but these should not be used as excuses for radically restricting almsgiving or for abandoning the practice altogether. The medieval phrase ‘poverty is not a kind of crime’¹³ echoes like a challenge thrown down in advance to all subsequent centuries of punitive and deterrent poor law.

Where resources were limited, the canonists established an order of priorities, but even the most hard-line medievalists said that alms should be given to all in need, apart from the wilfully idle. Poverty was not to be assumed to be a moral defect on the part of the poor, as it came to be seen in later centuries – when the idea grew that that a man who was not in work was idle and in need of correction.

In our modern world we invariably think of the Church and State as separate institutions with their own distinct spheres of activity. That was not how medieval men and women saw it. Life had a twofold destiny – that of the body and that of the spirit – and they were ineluctably bound together. If all are ‘one body in Christ’, then giving involves not simply the donation of money or material goods, but a relationship between donor and recipient which is spiritual, reciprocal, communal and inclusive. The spiritual dimension means that giving is not simply the donation of money or material goods but also the manifestation by the rich of the love for the poor demanded by Christ. The medieval view was reciprocal in its acknowledgement that philanthropy required something of both the giver and the receiver, and that it placed both responsibilities and rights on each side. Medieval charity embodied a mutuality which was both social and spiritual.

This is something we have lost today. As Rowan Williams puts it in his interview in my book:

“The image of the Mystical Body is, first of all, the idea that every part of the body, when it’s functioning well, enables the whole body to function well. If a part is malfunctioning, is frustrated, diseased, damaged, then everybody suffers. Every part of the body has something which it actively contributes.

“Therefore, when you address questions about philanthropy, you’re addressing not the solving of a problem, but the releasing of a gift. When I give, I’m not solving a problem. I’m setting you free – to give and to act too. I need you to do that because, just as your good depends on me, my good depends on you. It’s that sense of the organic interconnection of everybody’s well-being. The implication of that is that everybody has something to give.”¹⁴

That, in conclusion, is what today’s philanthropists have to learn from the charity of the age in which was built the great collegiate church which we now know as Manchester Cathedral.

Notes

1. From the *Selden Carol Book* (Early 15th Century), Bodleian Library, Oxford.
2. James Fishman, *The Political Use of Private Benevolence: The Statute of Charitable Uses*, Pace Law Faculty Publications, Paper 487, 2008, pp.46–7.
3. Charities Act 2006, Explanatory Notes, Sections 1 – 3, §13–18.

4. *The Shepherd of Hermas*, Mandates, 8.7–10, quoted in Roman Garrison, *Redemptive Almsgiving in Early Christianity*, Sheffield, 1993, reprinted London, 2015, p.88
5. Aquinas, I 93,1, quoting Augustine QQ. 83, qu. 74, and Genesis 1:26.
6. *Piers Plowman*, C-Version, Passus x, line 79, author's translation from the Middle English text in William Langland, *Piers Plowman*, trans. E. Talbot Donaldson, New York, 2006, p.142-4
7. *Piers Plowman*, C-Version, Passus VI, LINE 307, author's translation from the Middle English text in William Langland, *Piers Plowman*, trans. E. Talbot Donaldson, New York, 2006, p.110
8. Painting by Tommaso di Cristoforo Fini (called Masolino da Panicale) 1383–ca. 1440, fresco, 1425, part of a series in the Brancacci Chapel, Chiesa di Santa Maria del Carmine, Florence.
9. Originally published as 'Wealth', *North American Review*, 148, issue 391, June 1889, pp.653–65. One critic, horrified by the brutality of Carnegie's ideas, dubbed it The Gospel of Wealth in contrast to the Gospel of Christianity. Carnegie shamelessly adopted the term and retitled it *The Gospel of Wealth*, New York, 1901.
10. When the seminal book *Philanthrocapitalism* by Matthew Bishop and Michael Green was first published in 2008 it carried the subtitle *How the Rich Can Save the World and Why We Should Let Them*. They later changed the subtitle to *How Giving Can Save The World*, London, 2010.
11. Aquinas II-II, 66, 2–3; II-II 7,2; 24,4–9; and II-II, 58,3
12. Brian Tierney, *Medieval Poor Law*, p.46.
13. A famous phrase of the fourteenth-century Italian canon lawyer Joannes Andreae: 'Paupertas non est de genere malorum – poverty is not a kind of crime', Glossa Ordinaria as Sext. C Iq. w. C. II.
14. Rowan Williams, quoted in Paul Valley, *Philanthropy – from Aristotle to Zuckerberg*, 2020, p195.

For all other sources see *Philanthropy – from Aristotle to Zuckerberg* by Paul Valley (Bloomsbury)

What the charity of the Middle Ages has to teach Gates and Zuckerberg

Paul Vallely is the author of the highly-acclaimed history Philanthropy – from Aristotle to Zuckerberg which John Gray called: ‘The definitive book on philanthropy – a deep and probing study of an increasingly powerful force in our world’. He also wrote the international best-selling biography Pope Francis: Untying the Knots. His other books include The New Politics: Catholic Social Teaching for the 21st Century and Bad Samaritans: First World Ethics and Third World Debt.

Vallely is a broadcaster, keynote speaker and consultant on philanthropy, ethics, religion and international development. He is a Senior Honorary Fellow at the Global Development Institute at the University of Manchester. From 2013 to 2019 he was Visiting Professor in Public Ethics at the University of Chester. In his earlier career as a journalist he produced award-winning reports from more than 30 countries and has written in the New York Times, Sunday Times, Guardian, Independent and Times. He has a weekly column in the Church Times and is a director of The Tablet.

Paul Vallely has worked with government, businesses, NGOs and churches on projects aimed at strengthening the common good. He co-wrote the report of Prime Minister Tony Blair’s Commission for Africa and has advised Bob Geldof, Bono, Waitrose, the John Lewis Partnership, the Archbishop of Canterbury and the Catholic Bishops of England and Wales. He is a member of the Independent Commission into the Experience of Victims and Long-Term Prisoners. He is an Honorary Ecumenical Canon of Manchester Cathedral and a member of the Cathedral Council. He was made a CMG in the Queen’s Birthday Honours List in 2006.

A Tale of two Periodic Tables

*Covered by dirt and dust: the story of the oldest
published periodic table wallchart*

Nurturing nature's elements

M. PILAR GIL and DAVID J. COLE-HAMILTON

29 September 2020

This Memoir, covering lectures given back-to-back to the Society on the above date is divided into two parts. The first concerns the oldest known published Periodic Table wallchart whilst the second concerns a new Periodic Table featuring element availability and vulnerability.

*Covered by dirt and dust: the story of the oldest
published periodic table wallchart*

M. PILAR GIL

During the summer of 2014, when Dr. R Alan Aitken, Reader in Organic Chemistry at St Andrews, was completing a clear-out of a storage space in the school of Chemistry at the University of St Andrews, he spotted a pile of rolled up charts at the end of the room. The area was used to store away old apparatus, obsolete equipment, expired reagents, and miscellaneous papers. All those without any value were suitably disposed of. The charts, however, deserved special attention. The bundle consisted of 46 charts, mostly from the beginning of the 20th century, probably transferred to this storage room from the previous school of chemistry when the current building was built in 1968. One of the oldest and the most remarkable, was a periodic table of poster dimensions (Figure 1).¹

| Reihen | Gruppe I R ² D | Gruppe II RO | Gruppe III R ² O ³ | Gruppe IV RH ⁴ RO ² | Gruppe V RH ³ R ² O ⁵ | Gruppe VI RH ² RO ³ | Gruppe VII RH R ² O ⁷ | Gruppe VIII RO ⁴ |
|--------|------------------------------|-----------------|---|---|--|---|---|-------------------------------------|
| 1 | H-1 | | | | | | | |
| 2 | Li-7 | Be-9.4 | B-11 | C-12 | N-14 | O-16 | F-19 | |
| 3 | Na-23 | Mg-24 | Al-27.3 | Si-28 | P-31 | S-32 | Cl-35.5 | |
| 4 | K-39 | Ca-40 | Sc-44 | Ti-48 | V-51 | Cr-52 | Mn-55 | Fe-56, Co-59 Ni-59, Cu-63 |
| 5 | (Cu-63) | Zn-65 | Ga-68 | --72 | As-75 | Se-79 | Br-80 | |
| 6 | Rb-85 | Sr-87 | Yt-88 | Zr-90 | Nb-94 | Mo-96 | --100 | Ru-104, Rh-104 Pd-106, Ag-108 |
| 7 | (Ag-108) | Cd-112 | In-113 | Sn-118 | Sb-122 | Te-125 | J-127 | |
| 8 | Cs-133 | Ba-137 | Ce-137 | La-139 | -- | Di-145? | -- | |
| 9 | (-) | -- | -- | -- | -- | -- | -- | |
| 10 | -- | 165 | 169 | Er-170 | --173 | Ta-182 | W-184 | Pt-195, Os-195(?) Ir-193, Au-196 |
| 11 | (Au-196) | Hg-200 | Tl-204 | Pb-206 | Bi-210 | -- | -- | |
| 12 | -- | -- | -- | Th-231 | -- | U-240 | -- | |

Figure 1. The St Andrews 1885 Periodic Table Wallchart as discovered.
R. Alan Aitken, 2014. University of St Andrews Libraries and Museums,
ms39012

Owing to its fragility and special features, the table required preservation and conservation and to be stored in the optimum conditions of temperature and humidity. Dr. Aitken contacted the collections unit at the university and since then, the table has been restored and is now

A Tale of Two Periodic Tables

kept in the St Andrews University Library Special Collections with a facsimile on display in the School of Chemistry at St Andrews.² The St Andrews periodic table closely follows Mendeleev's Table published in 1871.³ The elements are arranged vertically according to their combination with Oxygen and Hydrogen, and then horizontally according to their atomic weight. The table is in German and produced in Vienna, as indicated by the name of the publisher ("Verlag v. Lenoir & Forster, Wien") and the lithographer ("Lith. v. Ant. Hartinger & Sohn, Wien") at the bottom of the chart. The table contains 65 elements compared to the 118 that we know nowadays. The presence or absence of elements in the empty spaces that Mendeleev had left on the table for elements that he foresaw but had not yet been discovered, allowed a first approximate dating between 1880 and 1886. However, an important piece of information that was missing, relevant not only to satisfy scientific curiosity but also to increase the museum value of the object, was to determine its exact date of publication. In addition, it was important to elucidate the details of the history of this periodic table to confirm its authenticity and prove its ownership.

A thorough search made it possible to establish the origin of the table and its probable date of publication and revealed the reasons and means of the table's arrival in St Andrews. The first clue to its publication date came from indexes and compilations of chemistry publications, as listings for a wallchart published in Vienna and with the same title as the St Andrews Table were found in two bibliographic compendia published at the end of the 19th century.^{4,5} In both of them, the wallchart is cited as published in 1885. No earlier Periodic Table wallcharts are listed on these comprehensive compendia, suggesting that the 1885 wallchart, of which the St Andrews Table is the only known surviving example, was the first to be published.

How could it be that a poster of a periodic table published in Vienna in 1885 had been found, more than one hundred and twenty-five years later, forgotten in a university in Scotland? There was no prior indication about the link between the chart and the University, no clue if it had been used for teaching or if the chart was a collector's item bought years after its publication to expand the large collection of alchemical and chemical works owned by the University.⁶ To explore different possibilities and with the 1885 publication date as reference, a search was conducted in the institutional archives of the University of St Andrews. A systematic inspection of historical photographic material, class diaries and notebooks related to the teaching of chemistry at the University, produced an Aha! Moment (Figure 2).



Figure 2. Vouchers for science class accounts (i.e. physiology, natural history, chemistry...), 1882-1902. M. Pilar Gil, 2018.

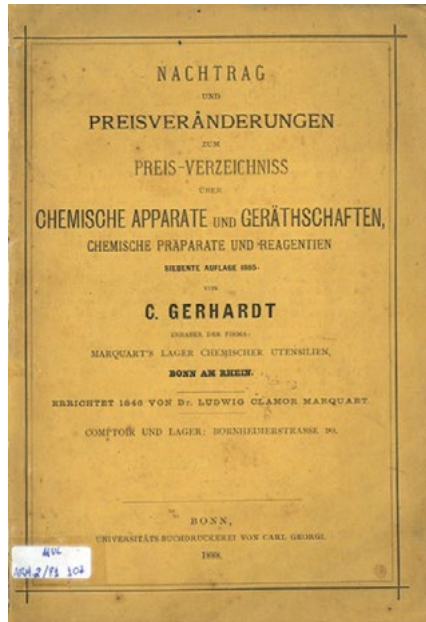


Figure 3. C. Gerhardt catalogue, Bonn 1888. Museu Nacional de Historia Natural e da Ciencia (MUHNAC) Universidade de Lisboa, 2018.

A Tale of Two Periodic Tables

An invoice, found among bundles of accounts, receipts and bills corresponding to science classes given on the years 1882-1902, showed an entry with the purchase of a wallchart from Mendeleev, from the catalogue of C. Gerhardt (Bonn, Germany) for the sum of 3 Golden marks, in October 1888.⁷ The receipt was addressed to Professor Thomas Purdie, who had held the chair of Chemistry at the University during the years 1884-1908.⁸ All signs indicated that the research was going in the right direction. However, to be totally sure that the purchase described in the receipt as ‘wallchart from Mendeleev’ matched exactly the table found in St Andrews, it became essential to find a C. Gerhardt catalogue from 1888, hoping that it would include the listing of a periodic table wallchart with a description that would match the one in St Andrews.

Commercial catalogues are short-lived as they are periodically renewed. There is no point in keeping past ones with outdated prices and products not inventoried anymore. However, reaching out to several cultural and heritage organizations in Germany, Austria, Portugal, the United States, and Italy, produced a positive result, when the Museum of Natural History and Science at the University of Lisbon sent to St Andrews images from an 1888 C. Gerhardt catalogue (Figure 3). One of these images showed an entry describing a periodic table with the same title and identical dimensions to those of the table found in St Andrews. The item also had the same reference number as the one in the receipt found in the archives, and exactly the same price (Figure 4).⁹

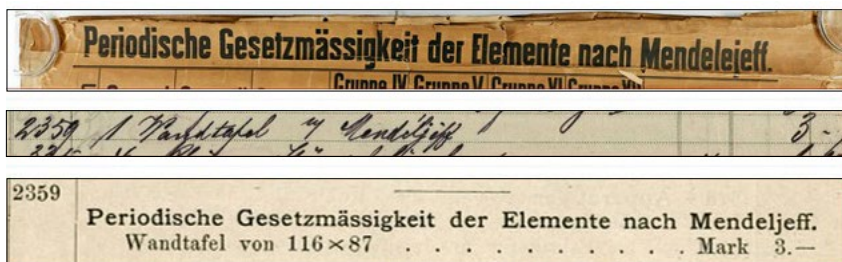


Figure 4. Top image: title on the Table. Middle image: Entry in the voucher. Bottom image: As listed in the catalogue. M. Pilar Gil, 2018.

In summary, this research showed that what can be considered the oldest published periodic table wallchart was created in Vienna in 1885 and sold by C. Gerhardt, a chemical company operating in Bonn, Germany, in October 1888. During that same year, this chart came to St Andrews via Rotterdam, as evidenced by the financial records of the University of St Andrews which are still preserved in the institutional archive of

the University. The Periodic Table's journey documents an example of long-distance trade that enabled the acquisition of equipment and publications in an extensive and diverse international market.¹⁰

Nurturing Nature's Elements

DAVID J COLE-HAMILTON

Suppose you were given 90 building blocks and told to make the whole world in all its beauty and diversity, would you be able to do it? It's hard isn't it? Yet that is exactly what nature does. It takes the 90 naturally occurring elements and combines them in a myriad of different ways to make everything around us – yes! Everything.*

That is the first message from a new Periodic Table, which was released in over 30 languages by the European Chemical Society (EuChemS) to celebrate the International Year of the Periodic Table in 2019.^{11, 12} This Periodic Table (Figure 5), for which support notes are available,¹³ is not like the Periodic Tables that you see in most school or University Chemistry laboratories. No, it is a strange shape and is highly coloured.

The shape¹⁴ comes because the area occupied by each element is proportional to its abundance in the earth's crust¹⁵ or in the atmosphere. Actually, a logarithmic scale has been used, otherwise you would not see the ones at the bottom, some of which are 23 orders of magnitude less abundant than oxygen.

What about the colours?¹⁶ They show that, if we go on living as we do at the moment – using and discarding things or keeping old phones in a drawer, for example, the elements in those items will be dispersed in such a way that they become unavailable. In some cases, the elements coloured red, that will take less than 100 years –indium for making your touch screen work, for example, has as little as 20 years left if we don't do something about it. Orange means we are increasingly using them so there may be a problem later and yellow that there are limited supplies so we need to watch out. We are not so worried about those coloured green, but the ones partially shaded in grey can come from mines where wars are fought over the mineral rights or the proceeds of the mining fund wars. The ores from these mines are called conflict minerals.

** We have not included the elements with atomic numbers higher than that of uranium because they are all radioactive and any significant amounts of them on earth are man-made, rather than naturally occurring.*

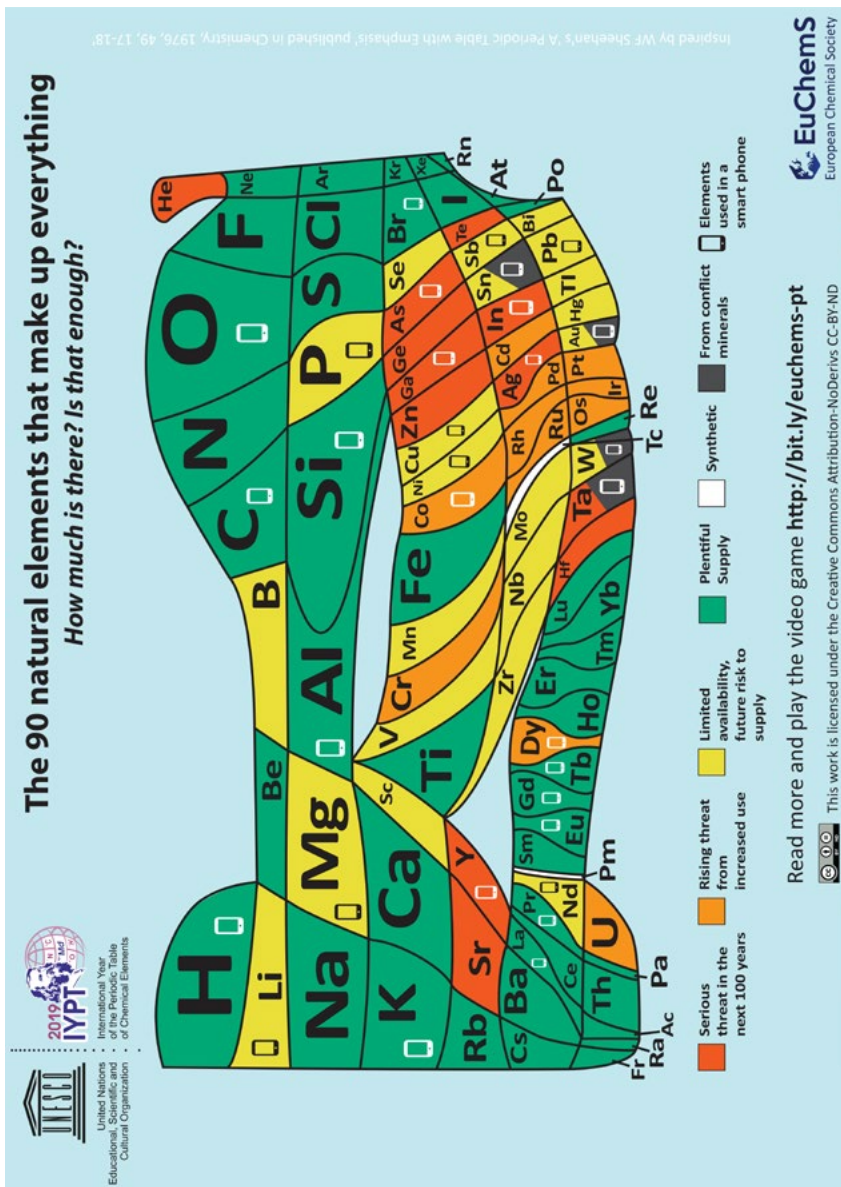


Figure 5. Periodic Table released by the European Chemical Society in celebration of the International Year of the Periodic Table 2019

Finally, 31 of the elements in this new Periodic Table carry a phone symbol. They are the elements in almost all smart phones.¹⁷ Look closely and you will see that all four elements that can come from conflict minerals are there as are six of the elements that have lifetimes of less than 100 years. Phone companies are good at traceability – the process of tracing an element from the mine where it is produced through all the processing steps to the phone itself and they ensure that it has not come from a conflict mineral source. If it had, you would have something in your pocket that people died to produce. Tantalum, for example, which is used in microcapacitors controlling surges of current, can come from Canada as well as from the conflict mines. The phone companies get it from Canada, but with less than 50 years supply overall, the temptation to use tantalum from conflict minerals becomes intense.

Have you ever had a Magnetic Resonance Image (MRI)? If so, you have been close to liquid helium because it is the only substance cold enough (boiling point 4 K) to allow the superconducting magnet in the imager to work. Helium is also used to stop deep sea divers from getting nitrogen narcosis because it replaces some of the nitrogen in the air and, unlike nitrogen, does not dissolve in the blood so cannot come out as bubbles on decompression. In these applications, the helium is recycled but what happens to the helium when your party balloon goes down or pops? It goes into the air and, because it is so stable, it diffuses unchanged through the troposphere into the stratosphere and eventually escapes the earth's gravity and passes into outer space so it is lost to the world forever. Helium is generated in the decay of radioactive nuclei underground, but almost all of it is lost by the diffusion into outer space.

You may think that's not a problem but we lose 10 % of helium every year through party balloons. From next year the only commercial helium field will be in Tanzania in a very rare geological formation that has trapped commercially significant quantities of helium. This field has about 10 years' supply if it is used once and discarded. Even if helium is entirely recycled in all other applications, which it is not, just continuing using helium in balloons at the rate we do now would send ALL the Tanzanian helium into outer space in less than 100 years. Faced with the choice of having helium balloons at your party or having an MRI scan for your grandchild which would you chose? Make that choice now!

If you own a smart phone, you will get a call every couple of years telling you that you are due an upgrade. Do you really need one? Of course not. We currently upgrade 1.5 million smart phones in a month (yes, in a month) in the UK alone.¹⁸ That's 18 Million a year. By keeping your phone for five years you can REDUCE the demand for the

endangered elements within it and protect their supply. You'll save a lot of money too by changing to a SIM-only contract. You can do even more! When you really feel you need to have a new phone, pass your old one to someone else so it can be RE-USED – don't just stick it in a drawer. The Royal Society of Chemistry has discovered¹⁹ that more than half the houses in the UK have one or more old phones lying around in drawers. If something goes wrong, have it REPAIRED if you can – outrageously, phone companies make this really hard, but the EU²⁰ and now the UK²¹ is coming down on them with the Right to Repair. Finally, when the phone really has reached the end of its life, hand it in for ethical RECYCLING of the components and elements within it. Be sure you use an ethical company for the recycling otherwise the phone will end up in the developing world being mined by children in the street using strong acid to get the gold out while the carcasses pile up beside the road making a massive humanitarian and environmental disaster.

So the new Periodic Table from the European Chemical Society isn't just yet another Periodic Table, it is the blueprint for life itself and what we must do to ensure that we can continue to enjoy the wonderful diversity of our special planet. So remember: Keep your phone for longer, hand in your phone for ethical recycling when it really is of no further use and never use helium balloons.

Maybe you're a bit strung out after reading this article so why not relax by going to <https://bit.ly/euchems-pt> and downloading the video game Elemental Escapades – a Periodic Table Adventure? It's great fun and you might even learn a bit of chemistry!

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Real Secrets of Alternative Medicine

RICHARD RAWLINS

19 October 2020

In 2019, the US Center for Inquiry filed consumer protection legislation lawsuits in the District of Columbia against CVS, the nation's largest retail pharmacy chain and Walmart, the world's biggest retailer.¹ CFI alleges that by displaying homeopathic products on shelves alongside evidence-based medicines and under signs indicating they can be used to treat specific diseases, the retailers are manipulating customers into thinking homeopathy has effects that evidence shows it does not have. The suits are currently being litigated in the DC Court of Appeals.

The CFI asserts "Especially during the pandemic, the FDA has a duty to protect Americans from charlatans who seek to profit from their fears by selling them worthless snake oil. If stores are going to sell homeopathy, then at the very least the packaging must clearly and plainly inform consumers what is in the product and that it's not government tested and approved like real medicine."

This is but one example of the problems which arise when false news, false claims and falsehoods are allowed to gain credibility. All doctors have a duty of candour, to have integrity, and if we identify potential for patients to be taken advantage of, we must speak out - yet opposition is muted. Homeopathy is no longer recognised in the NHS, yet persons of significant eminence are known to endorse homeopathic products. Their sycophants, some medically qualified, encourage their delusions and celebrities of all shades enthusiastically promote all manner of 'therapies', 'remedies' and protean practices for which there is no plausible, reproducible evidence of any beneficial effect beyond the placebo. With the space between the ears softened by incessant hyperbole, too many gullible and vulnerable patients fall victim to the blandishments of anti-vaxxers, supplement and snake-oil salesmen and those who promote pillules, pummelling, pricking and preternatural powers as a source of health and wellness.

This matters, not only on account of the vast sums wasted on these unproven methods - more than £1B p.a. in the UK and \$34B p.a. in the US - funds which could have been spent on improving conventional care - but on account of flight from science, the intellectual impact and disregard for critical thinking. Undoubtedly, "thar's gold in them thar

ills” – and the temptation to mine human vagaries is not resisted by the unscrupulous, but ethical treatment should not be based on lies.

Thousands of years ago, we knew how diseases arose – they were due to the gods and spirits. Hippocrates accepted that gods had influence, but set them aside from having any direct effect on health, and his principles resonate with us today. In 1620, Francis Bacon proposed that all prejudices and preconceptions should be dismissed. His ‘New Instrument’ required a clear description of facts, a classification of those facts, and the rejection of those which seemed unconnected with the phenomenon under discussion. Modern philosophy would describe ‘the method of agreement, the joint method and concomitant variations.’ Bacon ushered in the intellectual Enlightenment which moved the scientific method to the current era, yet so many have been left behind, wallowing in a soup of antithetical anachronisms.

There is no universally agreed definition of these non-evidence-based practices, but ‘Complementary and Alternative Medicine’ is widely applied to what I term as ‘camistry - practiced by camists on camees’. Professor Edzard Ernst and Simpon Singh have ‘So-called CAM’ to appositely describe ‘SCAM’ – “Any therapy that is not accepted by the majority of mainstream doctors, which are biologically implausible, untested, unproven, disproven, unsafe, only marginally beneficial, or are placebos.”²

In 2000, the House of Lords reported on camistry and identified three main groups: those which had become ‘professionally organised’ (homeopathy, osteopathy, chiropractic, acupuncture and herbalism); ‘those which are better established’ (Bodywork, Reflexology, Shiatsu) and ‘Alternative disciplines’ including Ayurvedic, Vedic yoga, Traditional Chinese Medicine, Naturopathy, Anthroposophical medicine, crystals, Reiki, Iridology, Radiology – all of which rely on ‘energy’ of some unidentified kind or another.

There is really only one important ‘real secret’ to consider – which is that camists and their acolytes do not want their favoured therapy to be too closely analysed. It simply will not stand up to scrutiny. If it did, it would be accepted as ‘medicine’, would not be a SCAM and they would be held accountable. There are other issues which camists would rather keep secret – importantly, that camistry does work – but simply not as camists would have you believe. As Professor R. Barker Bausell, the former Director of the US National Institutes for Health CAM Specialised Research Center says; “CAM therapies are nothing more than cleverly packaged placebos. And that is almost all there is to say about the science of CAM.”³ In the West, many term these

modalities 'woo'- Chinese charlatans perhaps prefer 'wu' - Chinese for the 'nothingness' which is at the heart of all camistry.

I have identified many more 'secrets' e.g. Medicine uses scientific methods - camistry relies on faith; If you integrate fantasy with reality, you do not instantiate reality - if you mix cow pie with apple pie, it does not make the cow pie taste better, it makes the apple pie worse (Mark Crislip, President, Society for Science Based Medicine).⁴ And at heart, the basis for the effects of all CAMs is the same as that which makes the earth move under other circumstances, that is, sex. The multitude of neurotransmitters realised at times of pleasure, particularly dopamine, can be generated by the practices of camists and, I suggest, the basis of that release is a form of auto-hypnosis, assisted by the response expectancies induced by the pricking, pillules, pummelling, potions and preternatural powers employed by the camist - collectively, the placebo responses.

Neurotransmitters are powerful chemicals with powerful effects on psychology and physiology, yet none will have much effect were it not for preconditions. Many camees, those interested in camistry, are disillusioned with modern paternalistic medicine and like to feel they are in control. They seek a psychological crutch and comfort blanket provided by the charisma of the camist, and especially consolation, hope and love, in the charitable sense. Doctors should be providing these three domains and many do so commendably, yet the camists are specialists in sorcery and for some, their magic has more effect.

Magicians are very honest. We say we are going to fool you, and then we do! Camists lack that integrity. They fail to gain fully informed consent or to tell their patients: "I am going to offer you a procedure which has not been scientifically demonstrated to have any effect beyond the placebo - but that itself might enable you to better come to terms with your condition. With that understanding, would you like me to try?" Honest placeboists will openly describe the placebo response and offer the consolation, hope and love the patient needs. This requires judgement, critical thinking, and time to take the trouble to ensure understanding. Yet we can all be placeboists, we can all benefit patients whether or not we are medically qualified. We can all set aside falsehoods, and, in a climate of intellectual integrity and clinical honesty, we can all care. May the Wu be with you.

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THE PERCIVAL LECTURE

*Identity Through Education: Remembering
Robbins and Newsom for Mid Twenty-First
Century Higher Education Policy*

KARL DAYSON

20 May 2021

Post-18 education policy is in crisis - torn between higher and further education, the cost of undergraduate degrees, the demands of parents and students, and the growing economic significance of universities. This has resulted in a new political divide between those that attend higher education and those who leave school and go into paid employment. It is the articulation of this division and its connection with notions of 'place-based identity' that is shaping education policy in the 2020s.

Yet, the origins of this distinction can be found in government policy of the early 1960s and the response to two educational reform reports (Robbins Report on Higher Education and Newsom Report on those that do not attend university). This article revisits these two reports and their differential reception by the policymaking establishment. It also touches on how the outcome of the 1960s policy debate continues to influence policymaking in the post-Brexit world. In conclusion it will highlight the increasing public demand for higher education, how that is fuelling the economic and political significance of universities, and why this means these institutions should support educational policy aimed at those unable or unwilling to secure a degree. However, it will begin by explaining the intellectual political division in which today's universities find themselves.

Godhart's Thesis of 'Somewheres and Anywheres'

One of the dominant narratives of our time is that globalisation and technology transformation are changing work and disrupting communities. But this reshaping is uneven within nations, as Castells warned us in the Network Society.¹ Globalisation is creating a new elite: detached from their home nation, with a shared commitment to a 'better' and more 'enlightened' world. This elite is highly educated and mixes freely with the global leaders of industry, particularly the transnational

corporations that are changing the economy. Accompanying this is a technological shift whereby entire innovation processes can occur without physically moving anything beyond data via the internet, colloquially known as Industry 4.0. This has evolved into a discourse about a ceaselessly changing and integrated world, and the need to embrace it for personal development. However, most people still work in industries where this technology plays a limited role and where they identify themselves as national citizens.

In contrast is a counter movement of national shared identity (communitarianism at best, but populism all too often) that presents a very different future. It is in this tension that higher education finds itself today, exemplified by David Goodhart's seminal 'The Road to Somewhere'²² where a new social cleavage in British life was introduced, or at least a new way of labelling existing division. Writing in the aftermath of the Brexit vote Goodhart sought to explain the outcome in terms of a social psychology, as well as an economic, thesis. His ideas owed much to Richard Sennett's earlier writing on the Hidden Injuries of Class³ and 'Corrosion of Character'⁴. Like Sennett, Goodhart takes aim at the changing nature of work and how the dominance of meritocracy is damaging the psychology of individuals and their communities. For both writers, work is more than just transactional but has an intrinsic value (for Goodhart this is often overlooked by those on the left who focus on economic determinism and by the liberal elite who struggle to understand how meritocracy undermines the 50% that are defined as failures – intellectually drawing on Michael Young's work on 'Meritocracy'⁵). This intrinsic value is gradually eroded by deindustrialisation and weakening of inter-generational respect for work without ambition.

It is at this point that Goodhart departs from Sennett to develop a political analysis of a new type of citizen. He takes those that are rooted in places, patriotic, socially conservative, and often in modest to low-income employment, whom he describes as 'Somewheres' and contrasts them to cosmopolitan, rootless, meritocratic, socially liberal, citizens of the world that he calls 'Anywheres'. Near the top of the 'Somewheres' targets for criticism are the universities and specifically the expansion of mass higher education.

Universities have long been associated with globalisation and within that, informational technological transfer. But higher education has been more than an observer in this process, it is seen as an engine and driver of this transformation, and indeed universities and their leaders have often been at the forefront of championing this shift. For example, science by definition is borderless. There isn't British or French gravity, there is

just gravity. Researchers are used to thinking in terms of universalism and are comfortable with international collaborations. An entire culture has developed in which universities cooperate across borders on research projects and compete for global student recruitment. Over time the staff and student bodies involved begin to increasingly share the same values and fret over limitations to this.

Goodhart is also critical of Britain's 'boarding school culture of higher education', pointing out that going away to university is not the norm elsewhere in Europe. This spatial dislocation disrupts family and kinship bonds and alters political perspectives. Essentially, through this rootlessness and the importance of meritocracy to individual achievement, students are socialised into socially liberal outlooks, opening a political and geographic divide with their home community. For Goodhart the twin mobilities, social and geographic, are evils that universities are imposing on our society! Goodhart's point is reinforced by the observation that the move to mass higher education came about with little public debate and was imposed on an unconsenting population. This is dangerous territory for higher education, as it attacks the social compact of the public university sector in the UK.

For Goodhart the practical issue is displacement/crowding-out caused by degree level education. He argues that the reason the private sector does not invest in skills development (when compared to international peers) is due to the unique problems associated with Anglo-Saxon capitalism, but also the fact that firms do not need to invest, because even the worst educated graduate is better skilled, or at least has the transferable skills necessary, to grasp a sub-degree job. Why spend time designing a specific staff development programme when at no cost to the company they can get a pliable and flexible member of staff. This enables a hollowing out of training and a limiting of the opportunities of those that did not attend university, resulting in poorer quality graduates undertaking sub-degree occupations, whilst pathways to advancement for the other 50% are curtailed and they become trapped in low skilled, low wage, low value employment. And as the number of graduates increases, this intensifies downward pressure on the non-graduate group, while the former are expensively educated and inducted, formally and socially, into the cult of the 'Anyways'.

Revisiting The Robbins Report

So how do universities cleave a pathway through these competing perspectives? The first stage involves reflection and the need for modern higher education to revisit its own founding myth, namely the Robbins

Report⁶ of 1963 and situate it within its contemporaneous events. No public policy exists in romantic isolation and competes for attention, space and resources; that was certainly true for Robbins.

The central policy implication of Robbins was the commitment to offer a university place to all those with the ability to benefit from it - 'courses available to all those who are qualified by ability and attainment to pursue them and who wish to do so.' - known as the Robbins principle. It is assumed this started the era of mass higher education. However, the changes Robbins proposed were already underway prior to the report's publication. The Barlow Report of 1946 identified the need for more STEM education, which resulted in the creation of the plate glass institutions (in the 1950s and 60s)⁷. Meanwhile the Anderson Report⁸ of 1960 standardised tuition fees and maintenance grants (they were previously set at the discretion of local authorities), and a national system of applications began in 1961 with the establishment of UCCA.

On the eve of publication of Robbins on 22 October 1962 Lord Hailsham, Science Minister, visited Liverpool University where he described the report as the most important since Beveridge. But what made Robbins so significant and why does it continue to be held in such high regard, almost 60 years since its publication? Primarily, it is the quality of the original research within the report, with its quantified analysis of demand and the rejection of manpower assessment of need. The evidence showed that demand for higher education is continually expanding. For Robbins this was based on weakening social inequality and the widow's cruse of supply. A popular argument against expansion in the 1960s was known as the 'pool of talent', i.e. there was a limited number of individuals that had the necessary natural ability to benefit from higher education. Robbins demolished this perspective in a series of tables exploring the class and gender composition of education until 18 and beyond. They showed under-representation of working classes at all levels. Perhaps the most damning data not only highlighted this phenomenon, but even when these children were rated in the top third of 11 plus, they were actually less likely to stay on in education beyond 18 than children of those from professional classes who had been in the lower third attainment level. Either the latter's natural talent bloomed later or as the evidence demonstrated, (the former were more likely to get A levels) something else was at play.

For Robbins this provided a prima-facie case for an expansion in places and by extension the creation of ten new universities. Reinforcing this was his widow's cruse argument. Citing the First Book Kings: 17:8-16 he stated:

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If there is to be talk of a pool of ability, it must be of a pool which surpasses the widow's curse in the Old Testament, in that when more is taken for higher education in one generation more will tend to be available in the next. (page 54)

Robbins found that most of the growth in student numbers during the late 1950s and early 1960s wasn't from talented working-class kids, but the offspring of the professional classes and that the children of parents who had a post 18 education were more likely to follow in their footsteps. Consequently, any expansion aimed at widening participation would create even more demand from wealthier families and families where parents had attended universities. Yet to this day it continues to confound critics. When the Millennium Survey⁹ found that 97% of mothers with infants wanted their children to attend university we inevitably slide into another bout of moral panic! Of course, the significant difference between 1963 and 2021 is that Robbins was charting a course of higher education out of the period of elitism towards the age of technocratic meritocracy, whilst today the UK stands at the end of mass higher education and gingerly step towards a universal system.

But what has driven university participation in the post war period? There have been two trends: rising living standards have resulted in expanded expectations; along with compulsory education until the end of the childhood, which reached 18 in 2014. This rising tide of compulsory education has always been somewhat distinct from the world of higher education, but now the water is lapping at the top of the dam and if everyone remains in education until 18, surely the demand to stay until 19 and beyond will intensify. As that happens more will seek to move into higher education and the days of universal university education stand before us.

If critics accepted that Robbins' demand analysis demonstrated the widow's curse, the failure to design a sustainable financial package was his curse. This is rather unfair. Robbins wanted a mixed system of grants and loans¹⁰ (Mandler 2020) but the Anderson Report's (1960) recommendation of grants precluded it, resulting in an unresolved disconnect between demand and cost. Looking back in 1980, Robbins¹¹ wished he had pushed harder for an income contingent loan scheme and indeed the committee's deliberations indicated they came close to including a statement that 'loans might become acceptable in ten years' time' (in 1973). Alongside this the means testing of maintenance grants was part a social move to the 'boarding school model of higher education' that young middle-class adults were embracing. Anderson, more than Robbins, acknowledged this cultural reality.

The omission of this argument means we have repeatedly sought to resolve the cost issue, post Robbins, with the outcome today being a system described as ‘fiscal illusion’ by the Office for Budget Responsibility¹², which Alan Roff¹³ (2020) memorably defined as:

it is not sustainable to retain a loan and debt repayment system in which loans are not loans, debts are not debts and repayments are not repayments. (page 33)

This is because 62% of loans will never be paid off and only 17% of graduates will fully repay. Due to an accounting change in 2019 the OBR insisted that £56bn of outstanding fees must be added to national debt, with an additional £15bn per year. Hence these could not be deemed loans and the debt was added to the public purse. We now have an unsustainable scheme with little appetite for the reforms Roff recommends. It is little wonder that the Government has chosen this moment to cast doubt on the economic validity of a degree.

But this is a legacy of failure to coordinate Robbins and Anderson. We are moving towards a post 50% post-18 education system with an untenable funding model. Either the Robbins’ principle is discarded to cap numbers, or a new funding model is required with a lower average unit price. A variation in fees depending on the institution and the programme is probably the next step, though this will not resolve the underlying fiscal illusion.

More significantly for today’s debate concerning the purpose of higher education, a week before Robbins the Government published another education report. Entitled ‘Half our Future’ the Newsom Report¹⁴ focused on the needs and requirements of the half of the population that left school with limited qualifications. This work has been largely eclipsed by Robbins which focused on the needs of the small minority that would benefit from higher education. It is this piece of work and its relationship with Robbins that has been marginalised from our historical account of higher education policy. Yet, at the time they were in competition, which continues to have implications for the contemporary policy environment.

Newsom Report: Educating the Other 50%

The aim of the Newsom Report was to:

...consider the education between the ages 13 and 16 of pupils of average or less than average ability who are or will be following full time courses either at schools or in establishments of further education.

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Even upon its publication there was extensive fear of it being marginalised by Robbins. In *The Times* the day after Newsom was published the editorial stated:

The Government's task is to apportion spending on education, which is bound to increase greatly, most profitably between the various sectors. The lower reaches must be kept in balance with the higher and the apprentice not forgotten for the graduate. The burden of the Newsom argument is that at present far too much public attention is being given to the education of the most gifted and not enough to that of the average people who work on the shop floor. 17/10/63 (page 17)

Whilst on the 18th October 1963 Sir Edward Boyle, opening a teaching training campus in Didsbury, stated:

it's no use having the best scientists and technicians unless you have the sufficient technologists and craftsmen to back them up.

Repeating a recommendation of the Crowther Report, Newsom proposed raising the school leaving age to 16 (it took until 1972 before this occurred). Relevant for today's debate the primary reason given for the change was the economic need to maintain parity with the USA and Europe. Other recommendations included more investment in deprived schools and technology, improving teacher training and support for graduate teachers, longer school days, vocational courses in the fourth and fifth years, and

equally, attention should be paid both to the imaginative experience through the arts, and to the personal and social developments of the pupils

All this sounds familiar to today's discussions. And it's apparent that Newsom was concerned with being overshadowed by the forthcoming Robbins review. Overall, the young people they are most focused upon should '...receive a greater share of the national resources devoted to education than they have done in the past, and by resources we don't mean solely finance, although this is important.' (page xiii)

Given the opportunities, we have no doubt that they will rise to the challenge which a rapidly developing economy offers no less to them than to their abler brothers and sisters. But there is no time to waste. Half our future is in their hands, We must see that it is in good hands. (page xiv)

Within a week of publication, the fears that Newsom would be eclipsed, were expressed by Peter Townsend, Professor of Sociology at the University of Essex. (Oct. 25 *The Times*).

‘The enthusiastic reception for the Robbins Report... may encourage the Government to go on choosing the wrong educational and social priorities. If we devote more of the extra resources of future years to “higher” than to other education, so that a larger but still small minority may have education after 18, we may create a larger professional class and even further enhance Professional and educational prestige without doing much to improve social communication and understanding... But fundamentally, there is a naked choice between the principles of privilege and of equality... Nearly everyone agrees that universities should be expanded, while I doubt whether a majority of the people of this country would prefer to see the greater part of our extra resources for education devoted to squeezing a larger minority through them rather than to abolishing over-crowded classes and drab facilities in the schools.’

The Government sought to convince the public that Newsom would not be overlooked, asserting on the 2nd November that £3.5bn investment in higher education would be matched by that for schools, while the Prime Minister invited Newsom to Downing Street on the 4th December in a public display of reassurance.

The Times on the 4th November, was unmoved, contrasting the alacrity of the government in accepting Robbins’ recommendations, to its paucity in responding to Newsom’s, and its unwillingness to craft a cohesive education policy:

‘It is a central weakness of the Robbins committee’s report that, with their concentration on the projection of present trends in secondary schooling, they did not stand back to consider what pattern of provision out of many possible forms of higher education would be best for the students, for the economic and other needs of the nation, and for the teaching, scholarship, and research of the universities.... Which matters most for the social or productive well-being of the nation, the multiplication of graduates a la Robbins or a better educated and technically more adaptable labour force a la Newsom? More graduates in technology are wanted, so are more highly trained technicians: which are wanted most?’

Whilst in a House of Lords debate on 20th November, Lord Eccles observed that the country would not forgive a government that deepened division in society by creating two ministries of education. Newsom

himself intervened, speaking at the NUT Conference on the 1st January 1964, he stated:

The danger of Robbins becoming a sort of star, in its way, is that we shall create a new meritocracy, a nation not divided by birth or money, but a much more sinister one. A nation built up of eggheads who have the power and the great generality of population who lack it.”

Augar Report: Robbins and Newsom Redux

Today we talk of Robbins as a piece of highly successful social policy that had universal support. The evidence from the time paints a rather different story. Though some of the conclusions were challenged, mostly from within Oxbridge. The real contention was the prioritisation of Robbins over Newsom and the needs of the minority over the majority. This was not just a class debate, there were genuine economic questions about the concentration of resources. The problem was not Robbins' conclusions, but its terms of reference. It was an opportunity to think about higher, further and compulsory education as related activities for economic advancement. The moment was lost and today we are still paying the price of that missed opportunity.

Echoes of this were evident in the Augar Report¹⁵ of 2019 and the response of the Association of Colleges:

‘For too long, we’ve had a system that works for half the population whilst neglecting the other half... We must not let this report be diminished to just a debate about tuition fees... In fact, more than half of the population have never been and never will go to university. Their education and life chances have been ignored for far too long.’

Unfortunately, Augar has metamorphosed into a debate about higher education and its funding, just like Newsom and Robbins. The absence of a visionary unified education policy within Augar resulted in an ideologically technocratic report that presented a zero-sum game between FE and HE.

Augar also failed the Robbins test, in that it's crucial to understand human behaviour and society when designing policy. Where was Augar's equivalent of the widow's cruse? Instead Augar drifted back to the manpower-based supply side reforms that Robbins emphatically rejected (as noted by Mandler with the quote from Augar that 'students' choices do not stand at odds with the government industrial strategy and the taxpayer's interests' p175). This manpower argument, which Moser (the statistician working for the Robbins Committee) thought was so

problematic in 1963 was seen as resolvable today because of technological solution (i.e. using big data sets from the Student Loans Company and income contingent loans system it's possible to calculate the 'exact' value of a given degree at a specified university. This information can be shared with the public and either used as a market signal or a regulatory control of recalcitrant universities).

Augar highlighted the missing middle of young people educated to sub-degree level¹⁶ but neglected the notion that denying access to universities to some to fill that gap, will appear a second-class choice. The risk that this will further privilege university places is barely considered.

The present Government seems to be in a position where it wants communitarian levelling up of place, but not individually levelling up of those within that community. This is what happens with manpower planning and a belief in technological determinism of data. Whatever politicians say, manpower management is about state control of individual lives.

Economic Significance of Universities

One of the strengths of Robbins is that he perceived teaching and research as complementary activities, to which students should be exposed to. Diversity should be in the type of programmes, their delivery, and the institutions; preferably a broader learning experience than that embedded in a classic Oxbridge education. This was to be partially achieved by the establishment of the new universities and Robbins was explicit in seeking free movement of staff between industry and the university, to facilitate greater cross-fertilisation of knowledge and practice, both for research and teaching. More recently, Taylor's¹⁷ work on comparative innovation shows that there are no common institutions, models or systems, and funding for R&D, that successful innovation intensive nations possess, except for the significance of networks, both domestically and internationally. Reinforcing Robbins argument for low friction exchange of ideas, people and practices.

Over the years if there's one common denominator in government reports on education, skills, and economy, it's a perpetual fear of declining global status:

When we look at what is planned for the future, the comparison between this country and other highly developed countries is more disquieting... Both in general cultural standards and in competitive intellectual power, vigorous action is needed to avert the danger of a serious relative decline in this country's standing (Robbins, page 47).

Augar was more explicit. Noting that whilst UK research performance was exceptional:

... questions about the UK's capacity to convert research into productivity growth and intense global competition give no grounds for complacency. (page 17)

The Robbins report was the first time higher education was perceived as part of the post-Imperial angst that shaped the reforming zeal in the post-War technocratic age. Whilst the USA was obsessed with Sputnik, we looked at the rapidly modernising Europeans, rebuilding their nations in the post-war environment, whilst our partners at Yalta moved into another orbit. Britain needed to become a scientific superpower and required an appropriately qualified workforce. What stood in the way was the conservatism of the British class system and nowhere was this more apparent than in an education system that favoured the wealthy and well-connected, stifling the meritocratic advancement of the nation and its people. Here was the argument that fused modernity with patriotic endeavour. This permeates Robbins and the political culture of the time. Or to use Godhart's typology we were all 'Somewheres'.

Unfortunately, universities became defined as the Other (taken from Hegel's concept as those not like ourselves), not because Robbins lacked a compelling narrative, or even the report's weakness on cost of higher education, but because its terms of reference which ignored Newsom's other half. This could have been a unifying story about the evolution of learning and the creation of a whole life education system. Instead, we had two reports competing unequally for public attention.

Yet higher education today faces two immediate public policy challenges:

1. It costs the taxpayer £15bn a year and any growth in student numbers is currently unsustainable.
2. It disproportionately benefits the wealthiest in society, thereby making it more difficult for those that did not go to university to have fulfilling jobs.

But sociologically a bigger problem is that universities are seen as disrupting the social fabric of society, driving wedges between families and communities and detached from the national endeavour. Despite this, more people than ever want their children to go to university and any new economy will require considerable investment in research and development.

Concluding Reflections

I think there are three substantive lessons:

- 1) People want their children to have more education and for longer. Left alone as has happened in higher education, it expands. Building on Martin Trow's¹⁸ concept, higher education is becoming universal, and this is causing changes and challenges that will continue to reshape the sector. Their effects include higher education being perceived as compulsory for middle and upper classes; the politicisation of control over institutions; and universities and the academy as a contested site for public opinion, questioning their purpose, and challenging their privileges.
- 2) A function of the first is that universities are becoming more important economically in our society. This will strengthen demands for a greater democratisation and scrutiny of research and development funding.
- 3) Education is for all. Not everyone gets top marks or has a learning style fit for university at a particular point in time. But universities should celebrate and cherish all learning. Whatever the level or scale. But that involves universities embracing their full participation in broader education policy, ghettoising themselves behind dreaming spires demeans themselves, their leadership role and prevents a new era of integrated learning for everyone's personal growth and the economic development of the nation. And this is best achieved in collaboration and in a spirit of genuine partnership with all stakeholders within the education and innovation systems.

Universities are always going to 'anywhere' places. The nature of research and the need to collaborate across borders, drives the creation of shared values. Equally, this caricature misses the extent of work most universities undertake in their local communities. But a sector that directly develops half the country is always going to struggle to appear inclusive to the other half.

The Robbins principle is under threat and at the same time taxpayers have legitimate questions about the cost of higher education. Universities may not like how these challenges are expressed, but they are relevant. The sector needs to speak to the wider society and work to bridge the gap. It should not wait for the Government to intervene and should have the self-confidence to offer a positive future that recognises the issues to construct a stronger and more cohesive nation.

The Brexit vote and subsequent fallout reinforces the sense that we have inadequate bridges in our society, whilst too many see bonding social capital as something that is for other people. We need more connections so we can have greater understanding and empathy. For too long too many universities have held fast to their own traditions and cultural practices, whilst giving the impression that societal and economic progress is inevitable and people should get used to it. This approach isn't sustainable. Either we change or sooner or later we will be changed in ways we can barely imagine.

Education is a great mission; its policy should be optimistic (something both Robbins and Newsom had). It should seek to break down barriers, not retreat to protective enclaves, gaps are there to be traversed. A highly skilled workforce and innovative economy are essential for a successful nation. Having individuals educated to the best of their ability achieves this whilst helping that person be healthier, happier and a more engaged citizen. Broad, open, inclusive, and ambitious were features of both the Newsom and Robbins reports. We should have the self-confidence to recapture the spirit of their work and complete the endeavour.

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George Orwell: A Political Life

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Introduction

Those who know anything about George Orwell can probably name at least two of his books, *Animal Farm* and *Nineteen Eighty-Four*, and appreciate that their importance has to do with his analysis of totalitarian regimes. Many of Orwell's terms and concepts have entered the lexicon: 'Big Brother', 'newspeak' and 'room 101'. To use the phrase 'Orwellian' is to suggest ideas of dystopia, authoritarianism, the surveillance state, falsification of history, 'fake news', repression and manipulation. In our age of the Alt-right, 'QAnon' and many other conspiracy theories circulating through social media, it would seem Orwell's political insights have never been so apposite. Indeed, a recent biography argues just this case.¹ However, caution is needed when claiming Orwell as a commentator for the twenty-first century. Often, Orwell's political analysis is stretched to fit current concerns of which Orwell could have known nothing. Hence his analysis of the role of the intellectual in society, the nature of state power and arguments in support of 'democratic socialism' are better understood in the context of his own experiences as an imperial policeman in Burma in the 1920s, a struggling writer during the Depression, a fighter against Fascism in Spain, a wartime radio propagandist and analyst of the emerging Cold War. While some may lay claim to Orwell as an icon of the political Right due to his critique of Soviet communism and the intrusive state, this essay will argue such a view fundamentally misreads his politics and life experiences. It is impossible to understand Orwell without appreciating his deep commitment to a form of socialist democracy. To grasp this and all that flowed from it, we must situate the writer within the context of his own time and his, rather than our own, political concerns.

Orwell was born Eric Arthur Blair on 25th June 1903, at Motihari in Bengal. He was a child of Empire, coming from what was once described as gentry stock whose wealth had not survived through the generations. His great-grandfather, Charles Blair, from a wealthy Dorset family, married the daughter of the Earl of Westmorland, who held plantations in Jamaica. Thomas Richard Arthur Blair, Orwell's grandfather, was a clergyman and his father, Richard Walmesley Blair, worked for the Indian

Civil Service in the Opium Department, overseeing the production and storage of the drug before it was exported to China. Orwell's mother, Ida Mabel Blair (née Limouzin), grew up in Burma where her French father had been an unsuccessful teak merchant. In 1904 Ida and her children settled in England. Other than a brief visit in mid-1907, the family would not see Richard Blair again until 1912.

It seems clear that the Blair family's social attitudes were those of the landless gentry, and Orwell later referred to his origins as 'lower-upper-middle-class', by which he meant people whose pretensions to social status bore little relation to their income. While he grew up in an atmosphere of impoverished snobbery, he was talented and secured a scholarship to Eton. Orwell would never wholly abandon the family name, but his first book, *Down and Out in Paris and London*, would appear in 1933 as the work of George Orwell, a pen-name derived from the river in East Anglia. At times in his life, such as when he worked for the BBC broadcasting to India, he would mainly use the name Blair, not least because George Orwell's *Burmese Days* was banned in India. To his family and many friends, he would remain Eric.

Critic of Empire

After returning to England, Orwell was sent in 1911 to a preparatory boarding school in Eastbourne, where he was distinguished by his relative poverty and intellectual brilliance. He would later portray himself as a morose, withdrawn, and eccentric child in his autobiographical essay, 'Such, Such Were the Joys'.² Yet in spite of the supposed horrors of St Cyprian's, he won scholarships to two of England's leading schools, Wellington and Eton, and chose the latter where he stayed from 1917 to 1921. Aldous Huxley was one of his masters, and it was at Eton that he published some early pieces in school journals. After school, instead of university, Orwell decided to follow the family tradition of imperial service and went to Burma as assistant district superintendent in the Indian Imperial Police. Between 1922 and 1927 he served in a number of country stations and at first appeared to be a model imperial servant. He soon realised how oppressive British rule in Burma was, and felt increasingly ashamed of his role. Yet, as he later put it, 'In order to hate imperialism, you have got to be part of it.'³ He would later recount his experiences and his reactions to imperial rule in his novel *Burmese Days* (1934), and in two brilliant autobiographical sketches, 'Shooting an Elephant' and 'A Hanging', classics of expository prose that discuss very significant moral concerns.⁴

During his leave in England in 1927, Orwell decided to resign from the imperial police, a profession he later described as ‘the dirty work of Empire’.⁵ Already in the autumn of 1927 he had embarked upon a course of action that was to shape his practice as a writer, namely, drawing his subjects from his own life experiences and seeking new ones to write about. Perhaps as a reflection upon the barriers of race and caste that had prevented his mingling with the Burmese, he now sought to expiate some of his imperial guilt by immersing himself in the life of the poor and outcast. In 1928 and 1929 he lived in Paris, working as a dishwasher and accumulating material for his writing. Yet his health suffered, and he was hospitalised with pneumonia. Undeterred, in 1930 he went to the East End of London to live in cheap lodging houses (‘spikes’) among labourers and beggars; tramping the roads of England with professional vagrants and joining the people of the London slums in their annual exodus to work in the Kentish hop fields. During the early 1930s he often worked as teacher in small private schools and spent time at the family home in Southwold.

Many of these experiences were woven into his writings. His first major work was *Down and Out in Paris and London*, a sort of documentary fiction in which actual incidents and episodes are assembled into a narrative. The book’s publication in 1933 earned him some early literary recognition. Giving up teaching in 1934, he completed his novel *Burmese Days* at his parents’ house in Southwold. This was published in the United States in 1934 after being rejected by Gollancz, Heineman and Cape over fears of libel actions. *Burmese Days* is a portrayal of a sensitive, conscientious, and emotionally isolated individual who is at odds with an oppressive and dishonest social environment. While fiction, it draws heavily upon his own experiences of Burma. The main character is a timber merchant who seeks an escape from the dreary and narrow-minded chauvinism of his fellow British colonialists in Burma. His sympathies lie squarely with the Burmese people, as did Orwell’s.

Moving to Hampstead in 1934, he worked as a part-time assistant in Booklover’s Corner and produced a second novel, *A Clergyman’s Daughter* (1935). The protagonist is an unhappy spinster who achieves a brief liberation among agricultural labourers in the hop fields of Kent. The novel was experimental, and Orwell came to see it as his least successful work and did not want it reprinted. However, the book has its defenders, some of whom note that it contains ideas Orwell would develop in later novels including a character who is spied upon and attempts to rebel against her circumstances but becomes isolated and destitute. As his biographer, D. J. Taylor notes, the female protagonist is subject to forces

beyond her control and presages some of the themes of *Nineteen Eighty-Four*.⁶ Orwell would develop connected notions in his next novel, *Keep the Aspidochelone Flying* (1936). Rooted in his own experiences in a second-hand bookshop, its plot concerns a literarily inclined bookseller's assistant who despises the empty commercialism and materialism of middle-class life, yet is finally reconciled to bourgeois prosperity through marriage to the girl he loves. Around this time, Orwell met Eileen O'Shaughnessy and they married in 1936. Eileen's impact upon his life would be immense, both personally and in helping shape his literary career.⁷

By this point in his life, we can see Orwell's revulsion against imperialism and materialism had led not only to a personal rejection of a bourgeois lifestyle, but to a political reorientation as well. Upon his return from Burma, he referred to himself as an anarchist and would continue to do so for some time. During the mid-1930s, however, he began to consider himself more of a socialist, although he was to remain essentially a libertarian and freethinker. Never really a 'joiner', it would seem Orwell did not flirt with official communism as many of his contemporaries did in the mid-1930s.

Social Critic

Orwell's first markedly socialist book was the unorthodox social and political critique, *The Road to Wigan Pier* (1937). It was a product of Orwell's January-March 1936 sojourn in industrial Lancashire and Yorkshire, investigating working class life and mass unemployment at the suggestion of the left-wing publisher Victor Gollancz. It was once again a result of Orwell's technique of immersing himself in the lives of people at the bottom of society, sharing, observing, and describing their lives. In its first half, *The Road to Wigan Pier* offers exactly the 'Condition of England' style documentary Gollancz wanted for his Left Book Club editions. Yet the second half, which the publisher did not wish to include until Eileen, in Orwell's absence, insisted, was highly provocative in its critique of middle-class socialists of his time.⁸ It reveals much about Orwell's ideas of what socialism should and should not include. Apart from his famous accusation that bearded, sandal-wearing, nudist vegetarians caused socialists to be viewed as cranks in the popular imagination⁹, he does affirm that socialism has the potential to improve ordinary people's lives and combat the threat of Fascism, as long as it is based upon values that are intelligible to all. He suggests these ideals must include justice, liberty and fighting unemployment. For Orwell, therefore, socialists should talk less about political philosophy and mechanical progress à la industrialisation in the Soviet Union, and

much more about common decency and fairness.¹⁰ There is, in his angry portrayal of desperate poverty and questioning of what might be done about it, the germ of an idea of English socialism he would articulate a few years later.

The Revolutionary

By the time *The Road to Wigan Pier* was in print, Orwell was in Spain where a civil war had been raging since the previous July. He had left England in December 1936 with the aim of gathering useful material for a few articles and possibly a book. While he clearly wanted to write about the situation, he also sought to be of practical help in fighting Fascism and arrived in Barcelona with credentials provided by Fenner Brockway, General Secretary of the Independent Labour Party (ILP) and H.N. Brailsford, a contributor to the *Manchester Guardian*. Through the local Independent Labour Party (ILP) contact, John McNair, Orwell was able to enlist with the militia of the dissident communist party, the POUM.¹¹ At the time, he was completely unaware of the intense political divisions within the Spanish Republican camp and oblivious to the fact that by joining the anti-Stalinist and pro-revolutionary POUM, he was embarking upon a trajectory that would mark him, and probably his wife, for arrest and possible elimination by NKVD agents operating in Spain. At both a personal and political level, this was Orwell's initial encounter with Stalinism.

Spain can be viewed as a transitional point in Orwell's political evolution. On arrival in Barcelona, he sampled the revolutionary atmosphere noting 'the working class was in the saddle ... every wall was scrawled with the hammer and sickle ... every shop and café had an inscription saying that it had been collectivised.'¹² Revolutionary organisations were those of the Anarcho-syndicalist CNT and the dissident communist POUM. 'Bourgeois' forms of address and dress had been abandoned and there was a strong sense of equality, which would be deepened by his experiences with the POUM militia with whom he served on the Aragon front from January to April 1937. To judge from his written accounts, especially *Homage to Catalonia*, Orwell's commitment to democratic socialism was immensely strengthened by his first-hand experiences of a society in which class divisions had virtually disappeared.¹³ As he mentioned in a letter to Cyril Connolly, 'I have seen wonderful things and at last really believe in Socialism, which I never did before.'¹⁴

His optimism was not to last. Returning to Barcelona on leave three months later, Orwell noted the revolutionary features of December

were no longer so evident. Apparent class divisions had resurfaced. Orwell himself would soon be caught up in the confrontation between the revolutionary forces of the CNT and POUM, and those of the Republican government and their local official Communist (Moscow-oriented) allies. Both Republicans and the Communist PSUC were deeply hostile to the revolutionary experiments and argued that these were undermining the war effort. Thus, a power struggle in Barcelona, and some other Catalan towns, began on 3rd May with an official PSUC-led take-over of the Barcelona Telephone Exchange, which had been held by the Anarcho-syndicalist CNT since July. The move sparked a spontaneous insurrection by CNT and POUM workers and militias in defence of the revolutionary gains. The so-called 'May Days' would last less than a week until the CNT workers, on the instructions of their leaders, laid down their arms. The much smaller POUM supported the CNT and Orwell himself became involved in the confused street fighting. In reality, the genesis of the 'May Days' and the social crisis in Catalonia in the spring of 1937 was far more complex than Orwell could have known at the time, and it seems unreasonable to condemn his early analysis of the situation.¹⁵

After the revolutionary resistance ended, Orwell returned to the front, and it was here, just ten days later, that he was seriously wounded by a bullet through the throat. Due in large measure to the care of Eileen, who had been in Barcelona since March working for the ILP, Orwell recovered fairly quickly. They were planning to depart in mid-June just at the moment the Republican government outlawed the POUM. Its leader, Andreu Nin, 'disappeared' and was soon murdered by the official Communists and Soviet agents. Many militants involved in the 'May Days' were detained. As we know from documents discovered in 1989, both Orwell and Eileen were marked for arrest as 'Trotskyists', part of the process of rounding up revolutionaries who were being described in the official communist press as 'Trotsky-Fascists'.¹⁶ Fortunately they evaded the authorities and crossed over into France on 23rd June 1937.

His Spanish experiences caused Orwell to return time and again to the conflict in his writing. It was certainly the beginning of a lifelong dread of Stalinist communism, first expressed powerfully in *Homage to Catalonia* (1938), which many consider one of his finest books. Yet his writings about the Civil War are perhaps rather more nuanced than many commentators both pro and anti-Orwell would allow.¹⁷ While Orwell's loyalties undoubtedly lay with his POUM comrades, he notes in *Homage to Catalonia*, that just before the 'May Days' he would have liked to join the Anarchist FAI militia yet in order to get to Madrid, where he clearly

wanted to be, he would have needed to join the International Brigade column organised by the official Communists.¹⁸ The events of May prevented him doing this and transformed his perceptions of republican politics.

For much of his time in Spain Orwell had steered clear of the internecine politics of the Left, never formally joining the POUM itself. Reflecting upon the political machinations of 1936 and 1937, he concluded that the revolution had been forcibly suppressed through the weight of Soviet influence upon the republican and Catalan governments. Apart from Mexico, only the USSR gave significant assistance to the Republic, and this afforded Stalin considerable leverage over government policies. Orwell powerfully condemned the official Communist position, arguing that what really mattered to Stalin was to forge an anti-German defensive alliance with France and Britain. Hence social revolution was suppressed in order to demonstrate to the democracies that 'good' Communists posed no threat to the bourgeois order in Western Europe. On the contrary, they were defending democracy against fascism; nothing more, nothing less. In some ways this was a reasonable analysis of the dynamic international context of the 1930s. Yet Orwell's broader analysis of the Spanish situation was often deeply flawed.¹⁹ Only later would he adopt a more realistic perspective as he 'looked back' and noted the war was really 'settled in London, Paris, Rome, Berlin – at any rate not in Spain'.²⁰ The revolutionary changes had done nothing to strengthen the republican side, it was true, but the Fascists had won because they were stronger, with more modern weapons, and possessed the backing of Hitler and Mussolini.²¹

Orwell remained angry about the official Communists' behaviour in their suppression of the POUM and CNT as well as the continuing lies and distortions published by Communist media outlets. As he noted in his essay 'Looking Back at the Spanish War', written six years later: 'history stopped in 1936'.²² This was a reference to totalitarianism, but also to the way the civil war had been written about in much of the press. It seemed to him that the history of this conflict could not be written truthfully in terms of what had actually occurred 'but of what ought to have happened according to various 'party lines''. There is something prescient in Orwell's fear that 'the very concept of objective truth is fading out of the world' in an era when all parties dealt in lies and distortions. Clearly such thoughts fed into his developing critique of totalitarianism.²³ His accusatory article, 'Eye Witness in Barcelona', was rejected as unacceptable by the *New Statesman*, due to its attack on the official Communists and the Republican Government.²⁴ Another

piece, 'Spilling the Spanish Beans', targeted the majority of the left-wing press for its lies and distortions, accusing the Communists of carrying out a 'reign of terror' in Spain.²⁵ There is little doubt that his first-hand experiences of manipulation, propaganda, surveillance, arrest and the murder of dissidents would feed into his future writing.

It seems likely that this period, 1937-38, was the high point of Orwell's political radicalism and certainly helps account for his criticisms not only of the official Communists but also of the Spanish Republican Government, whose suppression of the Anarcho-syndicalists and the POUM he equated with the actions of Fascist powers. He had the sense that his name was on a blacklist of political suspects because of his role in the POUM militia. *Homage to Catalonia* was completed in late 1937 and published by Secker and Warburg in April 1938.²⁶ Its rejection by Gollancz even before Orwell had begun a draft, and the poor responses to his articles on Spain, felt to Orwell like a continuation of the very censorship and lies he was complaining about. He also came under attack from the *Daily Worker* until the threat of a libel action over its accusations that he was a pro-Fascist and part of Franco's 'fifth column' took effect.

By March 1938 Orwell's health had deteriorated further and he was hospitalised in a sanatorium in Kent for five months. Later, in September, he and Eileen were able to take a six-month holiday in French Morocco, paid for anonymously by a friend, the wealthy Left-wing writer Leo Myers. Contrary to his usual instincts, Orwell had joined the ILP in June 1938 as an expression of his opposition both to a likely war and to the Communist Popular Front policy. He stated his position clearly:

For some years past I have managed to make the capitalist class pay me several pounds a week for writing books against capitalism. But I do not delude myself that this state of affairs is going to last forever ... the only régime which, in the long run, will dare to permit freedom of speech is a Socialist régime. If Fascism triumphs I am finished as a writer—that is to say, finished in my only effective capacity. That of itself would be a sufficient reason for joining a Socialist party.... I do not mean I have lost all faith in the Labour Party. My most earnest hope is that the Labour Party will win a clear majority in the next General Election.²⁷

During the Munich Crisis in the autumn of 1938, Orwell continued to oppose rearmament and signed the manifesto 'If War Comes We Shall Resist'. To a modern audience this appears a rather contradictory position to adopt for someone who had fought against Fascism in Spain.

Yet this would be to underestimate the popular view of the time that a new war would be a repeat of the Great War, only with much greater death and destruction. The manifesto also repeats a common theme on the Left that, just like 1914-18, it would be a war for empire, something Orwell equated with totalitarian aims. Hence, resisting a catastrophic capitalist-imperialist war appeared a consistent position at the time.

The Blairs returned from Morocco in March 1939 and *Coming Up for Air*, which he had written while away, was published in June. The novel uses the nostalgic recollections of a middle-aged man as a vehicle for examining the decency of a past England and expressing fears for a future threatened by war and Fascism. This would seem to reflect Orwell's own preoccupations and his re-reading of nineteenth century novels, especially those of Dickens. The novel has been seen as voicing his ambivalent position: nostalgic for an England he felt was slipping away yet aware that a social revolution was needed. The novel is an ironic reflection upon modernity and once again presages many of Orwell's totalitarian themes such as war on civilians, mass society, food queues, secret police, concentration camps, and the assault upon truth and history.

I can see the war that's coming and I can see the after-war, the food-queues and the secret police and the loudspeakers telling you what to think.²⁸

As such, it touched a nerve among reviewers, many of whom approved of the conversational style and found it an accessible commentary upon the state of the world in 1939.²⁹ As war approached, and with the announcement of the Nazi-Soviet pact, Orwell's opposition to war faded and his complex political development took another turn as he examined the values of Englishness.

English Patriot

In his long essay, 'The Lion and the Unicorn: Socialism and the English Genius' (February 1941), Orwell espoused the values of patriotism and argued that in the wartime context, it was essential that socialism and patriotism be viewed as interdependent.³⁰ Launching an attack upon the class system, which he felt was holding back the war effort, he thought an English socialism could be built which might:

swing the mass of the people behind it, drive the pro-Fascists out of positions of control, wipe out the grosser injustices and let the working class see that they have something to fight for, win over the middle classes instead of antagonising them, produce a workable imperial policy instead of a mixture of

humbug and utopianism, bring patriotism and intelligence into partnership—for the first time, a movement of such a kind becomes possible.³¹

The essay may well be Orwell's most complete political statement in the sense that it promotes the positive values of English socialism its author feared might be lost.³² He advocates an English socialist revolution guided not by Marxist ideology but by the practicality and decency of ordinary people united in a common cause.

If 'The Lion and the Unicorn' appears to modern eyes a curious and politically flawed piece, much of this has to do with the context and purpose of its composition. Written between August and October 1940 and published in early 1941, the backdrop was the disaster of Dunkirk and the fall of France, the Battle of Britain, fears of German invasion and months of the Blitz. Germany had yet to smash the Molotov–Ribbentrop Pact by attacking Russia, so this was a time when Britain and its empire stood alone. The essay was published by Secker & Warburg in a series of pamphlets and short books that constitute examples of unofficial wartime propaganda.

Orwell was now working as a critic and reviewer for *Time and Tide* and *Tribune*, having moved to London in May to be with Eileen, who had been working at the Press and Censorship Bureau of the Ministry of Information since August 1939. Rejected for military service on health grounds, he had joined the Local Defence Volunteers (Home Guard) as soon they formed in May 1940. Inspired by his experiences in the POUM militia, he thought the Home Guard could become a revolutionary militia, a people's army. This was perhaps not as eccentric an idea as it might now appear, given the strongly held perception that an invasion was imminent in the summer and early autumn of 1940. Anticipating such an invasion, Orwell was involved in guerrilla war training at Osterley Park run unofficially by the Spanish Civil war veterans Tom Wintringham and Hugh Slater.³³

Wartime Propagandist

One of the puzzles in Orwell's life is how he came to work for the BBC as 'Talks Producer' for the Indian Section of the Eastern Service. Here was a former imperial policeman who had savagely criticised colonial rule in Burma, a man of the Left whose social critique of poverty had brought him under the surveillance of Special Branch, and a democratic socialist with revolutionary tendencies who had taken up arms to fight Fascism in Spain. Why would he work for a key propaganda organ of the British state and as part of its empire service to boot? And why would the state employ him given *Burmese Days* was proscribed in India?

What we can say in explanation is that Orwell joined the BBC in August 1941 for several reasons, perhaps the most pressing being the simple need to earn a living. The constraints of wartime Britain and its censorship meant that many of the avenues for left-wing journalism and publishing were closing down. Orwell found himself increasingly inactive and found it hard to make ends meet, as he confided to his diary.³⁴ Eileen, was not in good health and was herself working for the Ministry of Information. Orwell had already written a script based on 'The Lion and the Unicorn' for broadcast in February 1941 and thereby gained a higher profile. Thus, his name had crossed the radar of Sir Malcolm Darling, chief of the Indian Section of the Eastern Service. This unit had been set up to broadcast to India in English and Hindi. Darling sought to harness Indian writers living in Britain to produce propaganda with which to counteract the increasingly successful German propaganda broadcast from Berlin to India. Axis propaganda broadcasts had begun in October 1939 with the aim of encouraging Indian nationalists to engage in subversion. But many Indian writers felt caught between their anti-Fascist sentiments and the fact that the British had often banned their own works in India. One such figure was Mulk Raj Anand, a writer who was a friend of Orwell, had also served in Spain and whose writings had many similar themes, such as attacking class and caste divisions and privileges. Like many Indian intellectuals, Anand felt the British were playing a hypocritical game in India by not extending meaningful prospects for independence. He said that at the time, March 1941, he still he felt neutral.

Darling had been able to assemble some Indian intellectuals for his Indian Section, including the experienced BBC-trained figure of Z.A. Bokhari. This unit initiated a weekly news report and cultural programme, for which Orwell was invited to offer four talks which were also printed in *The Listener*. There is no doubt that he wanted to be of service to the war effort and radio work was highly prestigious, reasonably well paid, and stable employment. The other factor that decided him was the German attack on Russia on 22nd June 1941. Those who had been reluctant to support the war effort due to the Nazi-Soviet Non-Aggression pact now found they could express their full backing for the war. Indeed, there was growing support for Russia in Britain. The Ministry of information came under attack for not taking the initiative quickly enough and Duff Cooper was criticised and soon replaced by Brendan Bracken. Broadcasting to India was now afforded a higher priority and more resources. A figure like Orwell, known to be highly sympathetic to Indian perspectives, would be a positive recruit because it would be difficult to write him off as a propaganda stooge.

Orwell began work in the India Section on 18th August at an annual salary of £640. His duties included commissioning, editing, and rewriting a large number of scripts from English and Indian intellectuals for broadcast to an intended audience of educated Indians with the aim of 'helping' them follow the progress of the war.³⁵ It has sometimes been said these were mainly 'cultural' programmes with 'educational' aims, but in reality Orwell was contributing to political propaganda designed to combat Axis perspectives and convince Indian listeners of the moral case for supporting the Allied war effort.³⁶ He had to work within an already established framework that was laid down by the Eastern Service Committee, with input from the MOI and the India Office. Issues of propaganda were openly discussed at meetings at which Orwell was a regular attendee. Hence, he well understood the role he was playing and justified this by his anti-Fascism and, somewhat ironically given his earlier position on Spain, the overriding necessity of winning the war. His weekly 'war commentaries', which began after Pearl Harbour in December 1941, offered perhaps the best opportunity to convey his own perspective. These were not only subject to censorship, but also required him to follow the official 'line'. As he confided in his War Diary, he made statements he did not believe to be true such as that the Japanese were planning to attack Russia, that public reaction to German air-raids was not vengeful, and spoke positively about the Soviet Union.³⁷

Official censorship was, inevitably, fierce. Any 'discussions' had to be written out first as scripts and submitted for censorship, then revised and resubmitted for censorship. Only minor changes could be made after the first round and often there was a 'switch censor' employed to literally cut off the microphone if a script was departed from. A large part of Orwell's role was to write the scripts, meaning that words would be put into the speaker's mouth and his or her thoughts reworked to fit the political requirements of the time. This was partly a development of pre-war practices where everything said was scripted as a means of avoiding speakers becoming tongue-tied when going 'live'. Hence for many old BBC hands this did not seem sinister. But Orwell fully realised his rewriting of other people's words was itself a form of censorship and he had misgivings about the integrity of doing so.

There were several topics on which Orwell diverged radically from official policy. Perhaps the most significant were over India and policy towards the USSR. He was painfully aware of the official responses to the failure of the so-called Cripps Mission in the Spring of 1942. Sir Stafford Cripps visited New Delhi with proposals for Dominion status for India after the war. These were rejected by Indian politicians and the

Indian National Congress would soon adopt its 'Quit India' position. Orwell's personal support for independence is very clear in 'The Lion and the Unicorn', but the MOI now sought to inject criticisms of some Indian leaders with the aim of conveying the impression that they were the real cause of Cripps' failure rather than his deeply flawed offer. Later, as the 'Quit India' movement took off in the summer of 1942, with widespread arrests of nationalist politicians, Orwell privately confided his sense of impotence on the Indian question. He was deeply critical, although not by name, of Subhas Chandra Bose, the nationalist leader who was broadcasting from Berlin via Radio Azad Hind (Free India). Orwell also rejected Congress' call for the British to simply leave and let them deal with the Japanese. Yet he personally never thought the British would willingly concede meaningful self-government. However, he did not resign from the BBC over this issue, nor would he satirise British rule again. His breaking point may well have had more to do with official attitudes to Stalin.

With Stalin now an ally, and war intensified by Japan's entry, the official propaganda line was to promote a positive view of Soviet Russia as an ally. Broadcasts were to stress issues like patriotism, scientific and cultural progress, military successes, modernisation, freedom of religion, and that the Comintern was a defensive not offensive organisation. Orwell was expected to reflect this 'line' in his war commentaries, much to his private disgust. Yet it has been suggested that on this matter, for a time at least, Orwell was guilty of what he would later term 'doublethink'. That is to say: espousing two contradictory beliefs at the same time.³⁸ Not surprisingly, he came under fire from the Left for his propaganda work, not least from the anarchist George Woodcock, with whom he had collaborated on some scripts. However, it seems clear that his personal view of the Soviet Union remained extremely hostile. Privately he expressed serious doubts about his role from late 1942, although it would be many months before he finally left.

Reflecting upon this period of his life after resigning in November 1943 to become editor of *Tribune*, he famously said these had been 'wasted years'.³⁹ Yet this comment fails to reflect the influence of his BBC work upon his subsequent writing, which was sharper and more direct than his earlier work. Certainly, his stated opinions of the BBC were unflattering, charging the corporation with administrative chaos, presiding over declining audiences and generally being a waste of time and public money. But as with many of his opinions, Orwell was contradictory. Other recorded remarks suggest that he felt the BBC was broadly truthful, despite its propaganda remit in wartime. He had

also noted in a February 1942 broadcast designed to inform listeners of forthcoming programmes, that he was happy to provide a useful service at such a time to the country (India) where he had been born and with which he had many ties.⁴⁰ He clearly took pleasure in bringing together a wide range of intellectuals such as Anand, E. M. Forster, Harold Laski, George Woodcock, Kingsley Martin and scientists like J.F. Horrabin to discuss current issues, literature and scientific developments. He worked extremely hard to adapt scripts and coordinate programmes, sometimes speaking himself and producing at least sixty weekly 'war commentaries' for broadcast to India, Malaya and Indonesia. Academic assessments of this period in Orwell's life once tended to accept his view that these really were 'wasted years' in which he had very little time to write freely, needed to fit in with the propaganda 'line' of the Ministry of Information (MOI) and submit to censorship and self-censorship. More recent scholars have argued that his short period as a wartime propagandist fundamentally altered his writing and paved the way for his greatest literary and political achievements: *Animal Farm* and *Nineteen Eighty-Four* which are so radically different from his pre-war (1945) writings.⁴¹

Against the State (1949)

Orwell's reputation as a political writer rests heavily upon his last two works. Both are aimed squarely at the authoritarian state, especially that of Stalinist Russia. This suggests he was an early Cold Warrior and he arguably used the term 'cold war' before anyone else in relation to the nuclear age.⁴² Although these works are usually read as anti-Communist, there is often a failure to grasp his broader meaning. Thus, Orwell is often claimed by those with deeply conservative agendas.⁴³ Yet he remained passionately committed to democratic socialism and his experiences in Spain informed his late masterpieces. He was supportive yet critical of the Attlee Government's moderate reformist socialism and advocated a federal socialist United States of Europe in his 1947 essay 'Toward European Unity'.⁴⁴ Orwell remained a very individual thinker, averse to joining political parties (his membership of the ILP lasted just a year), hostile to authority and bureaucracy, yet quite socially conservative and a strong English patriot.

If there are 'Tory' characteristics in Orwell's make-up, they are heavily outweighed by an affiliation to the political Left. *Animal Farm* is certainly a political fable attacking Stalin's perversion of the ideals of the Bolshevik Revolution. But it would be unreasonable to suggest that here Orwell was satirising socialist values of fraternity and equality when he espoused these ideals himself. His point was that revolutions can be sabotaged

and betrayed. Indeed, this may rather be the fate of all revolutions as he had witnessed in Spain. Following this experience he reflected upon the sabotage of the Bolsheviks' stated ideals, the cult of Stalin and his campaign against Trotsky and other Bolshevik leaders in the 'Show Trials', the purges and terror, propaganda and the rewriting of history. He turned all this into the brilliant political allegory, in which power-loving pigs hijack the revolution and establish a murderous totalitarian regime more oppressive than that of their former human masters. The setting, a farm, was directly influenced by his radio adaptation of Ignazio Silone's 1931 short story 'The Fox' although Orwell probably read the story long before and had hit upon the idea of animals taking over the government in 1937.⁴⁵ It is probable that his experience of the pressurised work environment of the BBC enabled him to complete his manuscript quickly in 1944. He also had considerable input from Eileen, who liked the story very much. Its style is far more direct than his pre-war texts and would require few changes to adapt for radio in 1946.

Ironically, given its subsequent adoption as a classic of Cold War literature (not least by the CIA), Orwell had great difficulty getting *Animal Farm* published. Several publishers rejected the manuscript, even though some could see its artistic brilliance. Gollancz predictably would not take it due to its attack upon Russia. Faber, Collins, the Dial Press, Hutchinson, and Nicholson and Watson rejected it for other reasons. Cape took advice, probably from the head of the Anglo-Soviet Liaison Section at the Ministry of Information, Peter Smollett. He strongly opposed publication on the grounds that it would antagonise a wartime ally. Smollett had another reason to be hostile. He was later discovered to have been a Soviet agent recruited by Kim Philby. Interestingly, Orwell would include him on his 1949 list of people who 'in my opinion are crypto-communists, fellow-travellers or inclined that way and should not be trusted as propagandists'. He accurately described Smollett as 'almost certainly [an] agent of some kind' and 'a very slimy person'.⁴⁶

He was most eager to get *Animal Farm* published, as he put it, 'on political grounds', even if this meant as a pamphlet.⁴⁷ This may have been partly to atone for his for his public acceptance of the propaganda 'line' on Russia from 1941. He now sought to undermine the myth that the USSR was meaningfully socialist. Rather belatedly, after several rejections, he gave the manuscript to Secker & Warburg who agreed to publish it in a very limited edition in August 1945.

By the time *Animal Farm* was in print, Orwell's life had been turned upside down first by the adoption of a baby, Richard, in June 1944, the destruction of his Kilburn home by a V1 flying bomb, and then by the

tragic death of Eileen almost a year later. During the last months of the war, he worked as a correspondent for *The Observer* in Paris and Cologne (March-May 1945) and covered the June-July post-war election campaign in Britain. It is difficult to fully gauge Orwell's state of mind by the end of the war, save to say that he was clearly grieving and his pessimism about the future deepened with the news of the dropping of the atomic bombs on Japan. Yet the almost immediate critical and commercial success of *Animal Farm* afforded him the means to escape London and relocate with his son to a cottage on the Isle of Jura in May 1946. This also allowed him to continue working on the novel for which he would become best known.

The Ministry of Truth

Nineteen Eighty-Four is arguably the definitive literary work of the twentieth century. It emerged from the nightmare of the 'devil's decade' of the 1930s, the horrific war years that spawned the nuclear age and the Cold War. The cumulative product of his experiences and political imagination, the novel was also inspired by what Orwell saw as the division of the world by the 'Big Three' Allied leaders at the 1943 Tehran Conference. The novel trisects the world into warring empire-states of Oceania, Eastasia and Eurasia. Its characters inhabit a dystopian society which is permanently at war and controlled by a totalitarian state that keeps its population under constant surveillance. At its core is the Party, Ingsoc, directed by a privileged elite that controls individual thought and determines what is and what is not 'truth'.

Orwell takes all of his key concerns and stretches them to their logical conclusions. Oceania's Ministry of Truth controls all information: news, entertainment, education, and the arts. His main protagonist, Winston Smith, works in the Records Department, altering data to fit with the Party's current pronouncements. This makes everything the Party says about both past and present appear true. As the Ingsoc slogan declares:

Who controls the past, controls the future: who controls the present, controls the past...⁴⁸

This idea was, of course, no invention since the Stalinist state had long practised the erasure not only of inconvenient individuals, but also of historical records in the form of documents and photographs.⁴⁹ From this follows other conceptions in *Nineteen Eighty-Four* such as that of 'doublethink', embracing two contradictory beliefs at the same time. Language had always fascinated Orwell and is, of course, the writer's tool. Hence, he invents an official bureaucratic language for Oceania, 'Newspeak', which is itself subject to constant revision. It is typified by

obliqueness, and the reversal of usual meanings with the aim of making other forms of thought impossible. The long-term aim, once Newspeak had replaced Oldspeak, was to make all non-IngsoC thought literally unthinkable. Hence IngsoC's key slogans reverse the normal meaning: 'war is peace', 'freedom is slavery', 'ignorance is strength'. Nuance is deliberately destroyed in order to restrict free thought. New words are coined such as 'uncold' in place of 'warm' and 'ungood' instead of 'bad'. Government ministries are deliberately named after the opposite (doublethink) of their true functions. Thus, the Ministry of Peace deals with war; the Ministry of Truth with lies; the Ministry of Love with torture; the Ministry of Plenty with starvation. Once again, Orwell did not have to invent much given that a Soviet regime, which was committed in ideological terms to eliminating inequality and developing a society more advanced and liberated than any hitherto existing had presided over deliberate starvation, mass murder, torture, and the total destruction of the freedoms of its population. Oceania's IngsoC was the exact inverse of its supposed inspiration, English socialism, just as the realities of Communist Russia were the inverse of its Marxist-Leninist ideology.

Ultimately, Orwell is describing the operation of a political power more 'total' than anything the world had so far seen. Yet while a fiction, it is still a projection of the realities of his own time. Central to the Party's control is its demand for unquestioning obedience to its leader, Big Brother, based upon the cult of the leader seen in Fascist and Communist regimes. The slogan 'Big Brother is watching you' and the literal reality of state surveillance via the telescreen, while not yet technologically possible in his time, was already an established motif in fiction and film. Thought control, administered by a 'thought police', was hardly much of an invention by the late 1940s. Winston's 'thoughtcrime' is to desire truth, decency and love. This leads him to rebel against the government both in thought, by hating Big Brother, and through his illicit love affair with Julia. Ultimately Winston's minor rebellion is crushed in Room 101, by being forced into submission by the threat of his worst nightmare: being eaten alive by rats. But the greatest triumph of the regime is not simply to make him agree that two plus two equals five, nor to plead that they torture Julia and not him, but to say that he loves Big Brother and actually believe it to be true. Again, Orwell did not need to invent much since the Moscow Trials had already seen old Bolsheviks confess to crimes they could not have committed, sometimes facing death with the belief that this would serve the greater good of the socialist state.

Fred Warburg, his publisher, called *Nineteen Eighty-Four* a 'study in pessimism unrelieved, except by the thought that, if a man can conceive '1984', he can also will to avoid it'.⁵⁰ This is very much Orwell's mission, namely, to warn that the outcome of the war may mean that atomic weapons would be monopolised by the few countries able to produce them and these states would remain in a 'permanent state of 'cold war' unable to conquer each other'.⁵¹ But in projecting thirty years into the future, Orwell is also saying that human societies have the power to arrest this development through democratic means.

Nineteen Eighty-Four was published in June 1949 both in Britain and America. Yet it is little short of miraculous that Orwell managed to finish the novel, given the very poor state of his health and with half of 1948 spent in a sanatorium. His efforts to complete the manuscript in quite primitive conditions on Jura may well have accelerated the progress of the TB that finally killed him in January 1950 at the age of 46.

Conclusion

In a society obsessed, dominated and to some extent controlled by the media, Orwell's nightmare vision speaks to us seventy years on even more powerfully that it did to the world of 1950. In the Internet age it may seem that questions of 'truth', and how we can have reliable knowledge free from distortion, are even more difficult to answer. Yet Orwell offers us some starting points. For instance, he was convinced that all art is political.

No book is genuinely free from political bias. The opinion that art should have nothing to do with politics is itself a political attitude.⁵²

He never tried to convince his readers that his own opinions had been left to one side and that he was offering a neutral, value-free perspective. For him, appeals to objectivity are themselves political statements to be viewed with suspicion. Orwell's perspective is today reflected by many who advocate 'activist journalism', arguing that honestly disclosing one's political and social values, and assumptions is to treat the audience with respect. They contend that the only useful knowledge is based upon facts, evidence and data that can be verified and tested by others. This means being investigative, provocative, and controversial rather than trying to pretend there are two equal sides to an argument that should be balanced out. This was very much Orwell's methodology.

We also might do well to recall Orwell's dictum that 'If liberty means anything at all it means the right to tell people what they do not want to hear'.⁵³ For him, this really means telling those in authority that their

power is harmful, oppressive, and tyrannical. It seems more than a little ironic, then, that these words are inscribed behind Orwell's statue erected outside Broadcasting House in 2017. The very presence of his statue, and the initial resistance to it from the Corporation, say more about the BBC than about Orwell, who would probably have been both horrified and amused in equal measure, given his ambivalent relationship with the national broadcaster.

In summarising Orwell's politics, values such as decency, honesty, and an instinctive feeling for those lacking power in society come to mind. As we have seen, from 1936 he championed a form of democratic socialism that would seek to redistribute wealth and secure a fairer distribution of economic resources through the social ownership of industries, collective economic planning, the confiscation of landed estates, the promotion of equal rights, the protection of privacy and a promulgation of fairer laws. Had he lived longer, his passionate love of the natural world may well have led him towards nature conservation and environmentalism. It might seem tempting to charge the author of *Animal Farm* and *Nineteen Eighty-Four* with political pessimism, but in times like ours, it is heartening and life-affirming to read his reflections on the common toad:

... Spring is still Spring. The atom bombs are piling up in the factories, the police are prowling through the cities, the lies are streaming from the loudspeakers, but the earth is still going round the sun, and neither the dictators nor the bureaucrats, deeply as they disapprove of the process, are able to prevent it.⁵⁴

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*How Will Extreme Weather Change Due to
Climate Change?
(and How to Interpret Media Stories)*

DAVID M. SCHULTZ

26 May 2021

Climate change brewing more extreme weather, shifting breaking points

2019 second-hottest year, expect 'more extreme' weather

Why extreme weather is the new normal

*Climate change means more extreme weather – here's what
the UK can expect if emissions keep increasing*

*Man-made climate change had role in some of 2015's
extreme weather*

Headlines from news stories exclaim that climate change is producing more extreme weather, as this collection of real titles shows. This soundbite is repeated over and over again by the media and by climate scientists. Sometimes this soundbite is restated that we have entered an era of “new normal” or that the weather has become “more weirder”. The purpose of this article is to help guide you through understanding how these statements are made, what they mean, and whether you should believe them (or even care). But first, I have two points to make.

First, the observed warming of Earth is due to us humans. If only natural processes are considered (e.g., changes in solar intensity, effect of volcanoes), we cannot explain the observed increase in temperature since 1850.¹ It is only the inclusion of anthropogenic effects of emissions of greenhouse gases that can explain the warming. The human fingerprint on climate is real, and computer models of the Earth's climate (used to determine the above conclusion) are accurate tools for studying the Earth's climate. We will revisit climate models later.

Second, individual weather events cannot be attributed to climate change. There were floods, hurricanes, and tornadoes before humans were on this planet, and there will continue to be floods, hurricanes, and tornadoes in a warmer climate. We have already altered the climate by

our existence here, and, in some sense, every weather event is attributed to climate change.² But, that is not a very helpful way of thinking about things or even communicating it.

What we can say about individual weather events and climate change, however, is the following. The frequency of these events may change. The distribution of intensities of these events may change. The locations of these events on this planet may change as some regions become more favourable for their occurrence, and some regions become less favourable for their occurrence. And, not all events will behave the same way. Understanding these kinds of issues is what I will discuss in this article.

Some of the media have not learned this lesson. Here is one example where the headline does not match the content of the article.

Today, scientists still generally agree that it's impossible to attribute any individual weather phenomenon solely to climate change. Storms, fires, droughts and other events are influenced by a variety of complex factors. And they're all acting at once, including both natural components of the climate system and sometimes unrelated human activities. For instance, a wildfire may be made more likely by hot, dry weather conditions, and by human land-use practices. But what scientists can do is investigate the *extent* to which climate change has influenced a given event."³ [emphasis in original]

This reasoned and well-written text is found under the headline "Scientists can now blame individual natural disasters on climate change"³, which is not what this text says at all!

So, the first lesson in a user's guide to climate change and extreme weather is "Watch out for headlines that don't match the news story, or even the journal articles upon which the story is based."

Back to the main point of this article, I want to address three questions with the use of some examples.

- Have extreme events changed?
- Will they change in the future?
- How do we communicate it?

Specifically, I am going to use a few snapshots of various studies that my research group has been involved in, as well as others from the scientific literature.

Have extreme events changed?

Consider how much confidence we have in our understanding of the effect of climate change on various types of extreme weather events.⁴ Scientists have the most confidence that extreme heat and cold events have been affected by climate change, the reasons for which are relatively easy to understand. Extreme precipitation events such as droughts and heavy rains are more difficult to understand how climate change affects these events, but we have some confidence in our understanding. However, some of the least well-understood extreme events – with the least confidence in how they will change – are severe convective storms, which is where my scientific expertise lies. I want to share with you some research that shows why the effect of climate change on these particular weather events is tough to understand.

Example 1: Tropical cyclones

Before we get to severe convective storms, let's talk about tropical cyclones. Figure 1⁵ shows the latest research on this topic. Researchers compiled information about tropical cyclones from various parts of the world, as far back as they could get records for. The first three time series show that the number of tropical cyclones in Australia, Japan, and the United States has not changed over a long period of time. There is a slight rise in the number of storm-surge events in the United States, but this is expected due to the rise in sea level (caused by the rise in sea-surface temperature and expansion of the volume of the ocean).

In a second paper⁶, these authors explore what will happen in the future, defined here as when the globe reaches 2°C global average temperature increase over pre-industrial temperatures (Figure 2). They conclude that, although the intensity and rain rate associated with the tropical cyclones will be substantially different in the future in most ocean basins, their frequency will likely be less than at present. So, it complicates the interpretation to say that extreme weather events will increase in the future. Yes, tropical cyclones will be more intense, but there will be fewer of them.

This leads to the second lesson in a user's guide to climate change and extreme weather. Is the study addressing the recent/present climate or the future climate? A third lesson states that saying that "extreme weather events increase in a warmer climate" is certainly not true for some types of weather events. Thus, it is incumbent on the author to say what metric is being measured. Is it the number of storms? Their intensity? Or, some other metric?

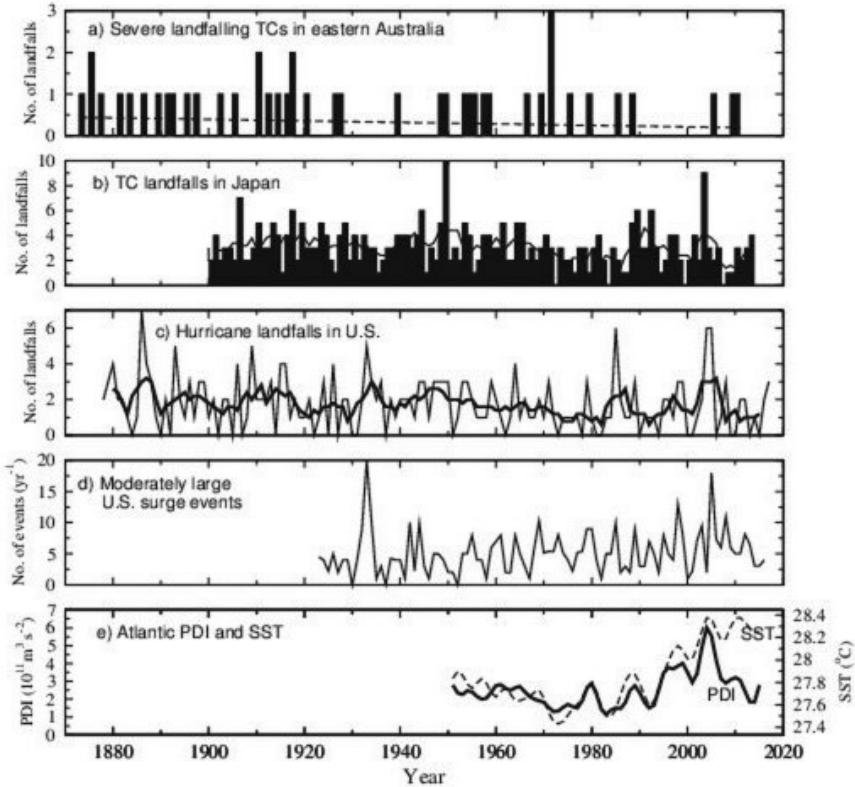


Figure 1. Observed tropical cyclone time series. (a) Annual number (bars) of severe landfalling cyclones in eastern Australia for 1873–2011, with the linear trend shown as a black line; (b) annual number (bars) and 5-yr running mean (line) of cyclone landfalls on Japan for 1900–2014; (c) 5-yr running mean (thick line) and annual (thin line) count of U.S. landfalling hurricanes for 1878–2017; (d) index of moderately large U.S. storm surge events for 1923–2016; (e) Atlantic basin cyclone power dissipation index and tropical Atlantic sea surface temperature index for 1949–2017, low-pass filtered. The power dissipation index (PDI) measures the accumulated cube of maximum wind speeds across all cyclones and storm lifetimes.

Figure and caption adapted from Figure 1 in Knutson et al.⁵

Tropical Cyclone Projections (2°C Global Warming)

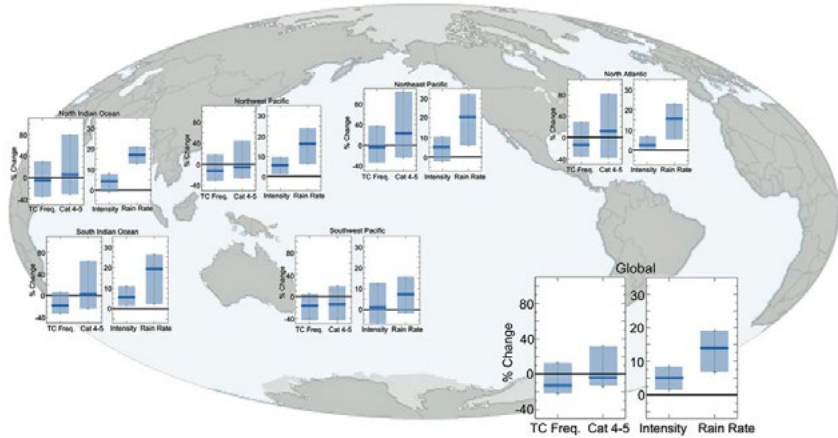


Figure 2. Summary of tropical cyclone projections for a 2°C global anthropogenic warming. Shown for each basin and the globe are median and percentile ranges for projected percentage changes in cyclone frequency, category 4–5 cyclone (the most intense cyclones) frequency, cyclone intensity, and cyclone near-storm rain rate. For frequency, the 5th–95th-percentile range across published estimates is shown. For category 4–5, frequency, intensity, and near-storm rain rates, the 10th–90th-percentile range is shown. Note the different vertical-axis scales for the combined frequency and category 4–5 frequency plot vs the combined intensity and rain-rate plot.

Figure and caption adapted from Figure 5 in Knutson et al.⁶

Example 2: Tornadoes in Europe

Unlike tropical cyclones that are hundreds of kilometres in diameter, can last for days, and are easily visible on satellite imagery, tornadoes are a small-scale phenomenon that needs to be observed, documented, and recorded in a common database. That is a challenge. Each country usually maintains its own database of tornadoes, if they do it at all. Furthermore, it may not be the national weather service that does this. For instance, the UK tornado database is maintained by the independent and volunteer Tornado and Storm Research Organisation⁷. Such organisations are usually championed by an individual or a group, so when that person dies or that group stops doing it, the tornado record may be discontinued and become incomplete. Nowadays, researchers can go back through newspapers, insurance records, records from within weather services, etc. to fill in the tornado record. However, my main

point is that a tornado needs an observer. A tornado that is not observed will not end up in the record.

The longest and best tornado dataset in the world is from the United States⁸, and a lot of work has been done there. Since coming to Europe, I have been interested in tornadoes in Europe. It turns out European tornadoes were actually more studied than U.S. tornadoes before World War II.⁹ Once a means to forecast tornadoes was discovered in the 1950s in Oklahoma, then U.S. research became dominant.

To solve this problem with the disparity and inhomogeneity of datasets of tornadoes from individual countries, an effort – called the European Severe Weather Database from the European Severe Storms Laboratory – was made to build a database of all occurrences of tornadoes in Europe.^{9,10} Figure 3 shows what that data looks like, starting at 1950.⁹

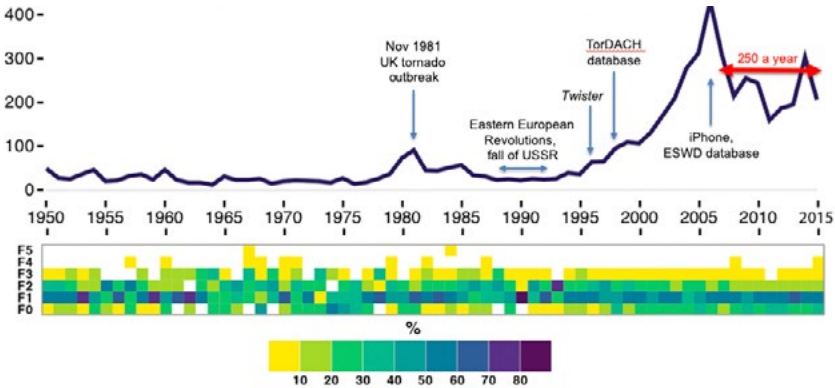


Figure 3. (top) The annual number of tornado reports in Europe between 1950 and 2015. A heat map (bottom), showing in each cell the percentage from the total number of reports, for which information on their damage magnitude was available, for each F scale and for each year, shaded according to the scale. Figure and caption adapted from Figures 2a,c in Antonescu et al.⁹

Although there was a large increase in the number of tornadoes in Europe starting in the late 1990s, that was not a trend that we can attribute to climate change. Specifically, spikes occurred due to prolific events, such as the November 1981 UK tornado outbreak (104 reported tornadoes). Relative minima occurred due to political instability in eastern European countries, where recording and maintaining a tornado database stopped being a high priority. Increases in the record occurred when the movie

Twister showed Europeans that they had been seeing tornadoes all along. Another increase happened when Germany, Austria, and Switzerland joined together to start building their tornado dataset (TorDACH), and when TorDACH grew into the European Severe Weather Database. Finally, the release of the iPhone and other smartphones allowed people to more easily photograph and report tornadoes in Europe. So, based on this graph, one might say that the tornado database had reached some kind of steady state around 2005–2006 and now reflects something closer to the true inter-annual variability in European tornadoes. But, the number of tornadoes is not the only metric to see if the dataset becomes stable and perhaps representative of the true distribution of tornadoes.

Another metric is tornado intensity, measured by the Fujita scale with F0 tornadoes being the weakest and F5 tornadoes representing the most violent. The distribution of tornado intensity appears to have reached a steady state at around 1994 (Figure 3⁹). Although F0 tornadoes should be more abundant than F1 tornadoes, the tornado record does not reflect that. The weakest tornadoes are being under-reported. Thus, we know that we have a way to go toward capturing the weakest tornadoes. Taking this a step further, we can look at the damages done by tornadoes in Europe, which appears to have reached a steady state around 2000.⁹ So, although we may have a stable dataset from the last 20–25 years (and we can use statistics to infer the tornadoes that we are missing), we still do not have a perfect dataset.

What about tornadoes before 1950? Well, again, it depends on the country. Figure 4 is a heatmap showing the number of tornadoes per 100 km² per year for each decade for all European countries 1800–2014.¹¹ Countries where the records have been pretty consistent are apparent (e.g., UK, Germany, France). However, there are other countries where the record has quite a bit of variability (e.g., Czech Republic, Estonia, Greece). Indicated on this graph is when national newspapers and the national meteorological services were first founded. These are often the sources of data from which to build these tornado databases, perhaps providing further insight into the tornado databases for these countries.

The point here is that there is a long way to go to continue to collect tornado data in order to understand the factors that affect the inter-annual variability of tornadoes, let alone identify any long-term trend that may be present due to global warming.

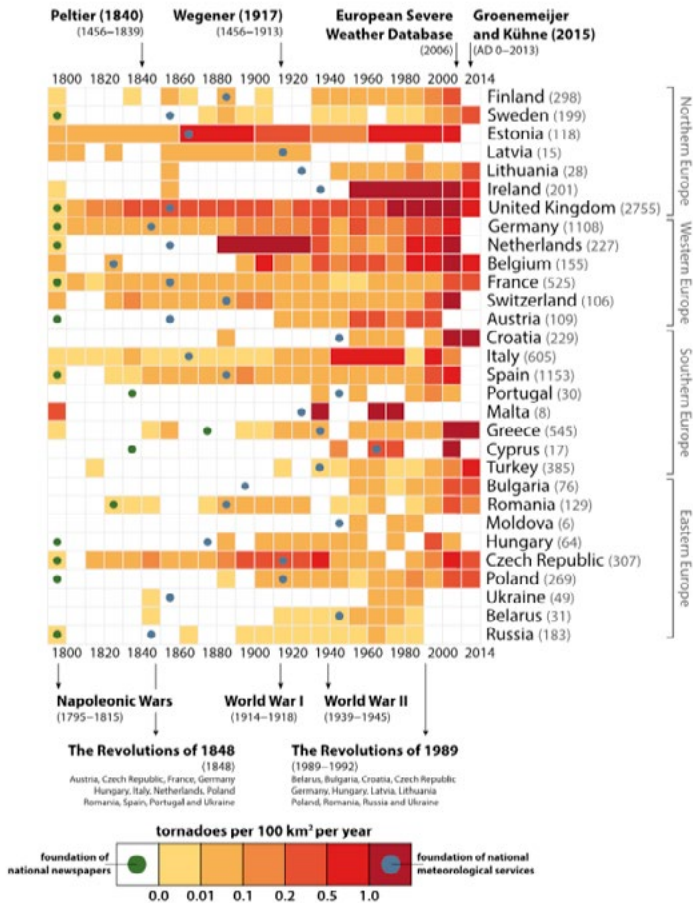


Figure 4. Heat map showing the evolution of tornado databases in Europe. Each cell represents the number of tornado reports every 10 years normalised by the area of country (shaded according to the scale). For each country, the first column contains all the tornado reports for 1799 and before and the last column contains the reports between 2010 and 2014. Tornado reports for which the exact date could not be retrieved are grouped together as one box. The green dot represents the decade when national newspapers were founded (almost always the leftmost dot); all the newspapers founded before 1799 were represented in the first column. The blue dot represents the decade when national meteorological services were founded (always the rightmost or only dot). For more information, see the original figure and caption as Figure 4 in Antonescu et al.¹¹

Example 3: Tornadoes in the United States

The tornado database for Europe is alright, but it could be better. What about the world's best tornado database from the United States? Here, the reliable part of the database goes back to 1954. Figure 5 is a bit old⁸, but it shows what I want it to show the best. As is the case in Europe (Figure 3), the number of F1 and greater tornadoes has actually been rather steady over time, but the weakest ones are being under-reported. That under-reporting is declining as more F0 tornadoes make it into the dataset. But, the increase in weaker tornadoes is mostly because of the introduction of the U.S. Doppler radar network, which allows better detection of the wind patterns that precede tornadoes (and occasionally the tornadoes themselves) that can later be verified with a ground survey of damage. So, rather than the single regression line showing a steady increase over time, Figure 5 might be better represented this way: two line segments with more or less steady datasets over time, punctuated by the introduction of the radar network around 1990, which has helped us identify more storms that could potentially produce tornadoes. Taken at face value, Figure 5 has been used by people in the media and on social media to say that climate change is making more tornadoes in the United States. But, that is not true at all.

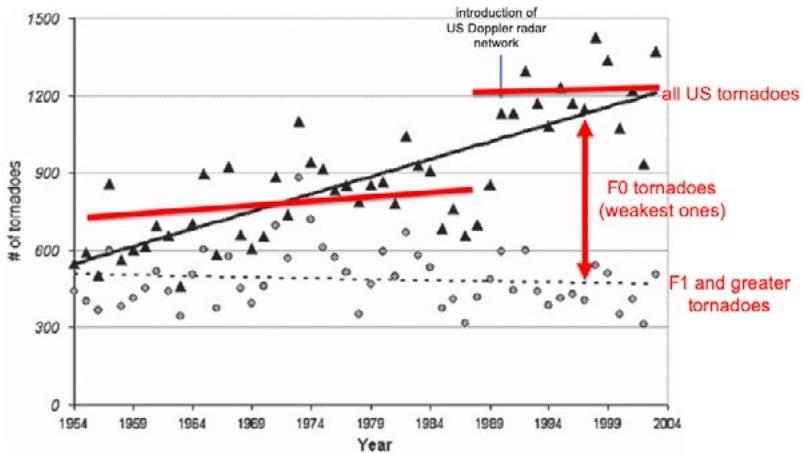


Figure 5. Annual number of reported tornadoes (black triangles) and annual number of F1 and greater reported tornadoes (grey circles) from 1954 to 2003. Solid black line and dashed black line indicate linear regression fits to each series. The two nearly horizontal line segments indicate estimated regression lines for two time periods before and after 1989. Figure and caption adapted from Figure 1 in Verbout et al.⁸

Because I feel a bit guilty about showing you an out-of-date figure, let me show you a more recent one, which brings the dataset up to 2019 (Figure 6).¹² After the introduction of the Doppler radar network, the inter-annual variability in the number of tornadoes was higher than before, with as few as 900 tornadoes a year to as many as 1800. Ideally, we would want to know when the signal of anthropogenic climate change exceeds that of the inter-annual variability (the so-called time of emergence¹³). Imagine trying to tease out a subtle anthropogenic climate signal from this kind of dataset, which again is the best in the world for tornadoes. Given these limitations, it is little wonder that the confidence in our ability to detect a climate-change signal in some of these extreme events is difficult.

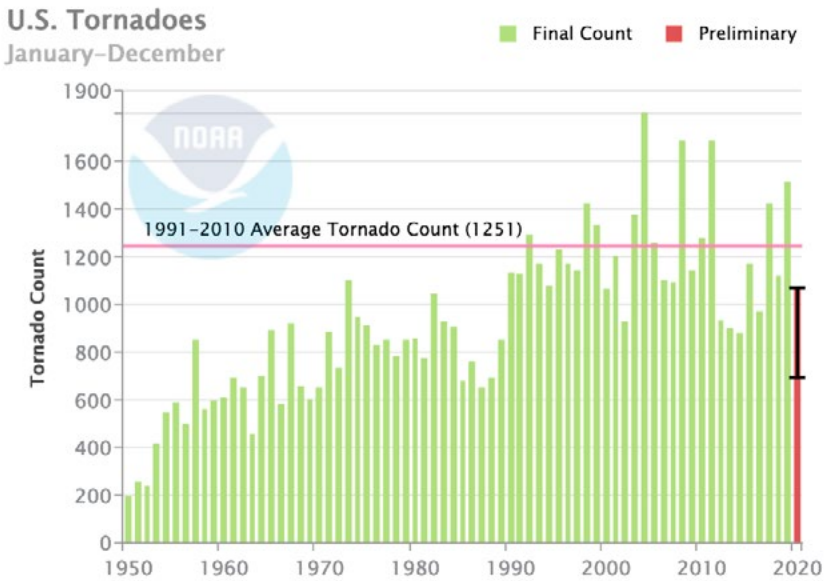


Figure 6. Annual number of tornadoes across the United States from 1950–2020 (preliminary data only for 2020), along with the average tornado count averaged over 1991–2010 (horizontal line at 1251 tornadoes).

Figure from the U.S. National Centers for Environmental Information.¹²

These results lead to the fourth set of lessons in a user’s guide to climate change and extreme weather. Collection of weather records and data on extreme weather events is critical. Without the collection of historical and present data on severe weather events, we will have no baseline to determine how complete the historical/present dataset is, what the

inter-annual variability is, and when the effect of climate change in the future exceeds the inter-annual variability.

Will extreme events change in the future?

The primary way we examine if extreme weather events are going to change in the future is through climate modelling. Climate models are computer programs that simulate the Earth–atmosphere–ocean system on a regularly spaced grid (ranging from around 40 km to 300 km), in other words, much bigger than the scale of hail, lightning, and tornadoes, and even bigger than the scale of the convective storms that produce them in the first place. Even some aspects of tropical cyclones are not well represented by these models.

Let's explore how we can assess the risk of tornadoes in the future from climate models. To do that, we need to step back a bit and look at the ingredients for convective storms, the parent storms of the tornadoes.

To produce an organised convective storm that could spawn a tornado, four ingredients need to be present: low-level moist air, conditional instability (a measure of how rapidly the temperature decreases with height), wind shear (a measure of how rapidly the wind direction and speed changes with height), and a mechanism to lift the warm, moist air upward to start the convective storm. Of these, the first three are feasibly resolved by climate models, but the mechanism that lifts the buoyant air to produce the storm is not. Although a concern, it is not a fatal flaw, as we will see.

For tornadoes, in particular, although meteorologists do not have a full list of ingredients for tornadoes, nuances in wind shear and moisture are believed to be responsible. It is also likely that the conditions within individual convective storms may affect tornado formation, so figuring out the complete set of ingredients for tornadoes is not easy. Therefore, what many researchers do is to look at the conditions for convective storms and tornadoes as best we can, because we cannot resolve them explicitly or even map out the full set of ingredients for them.

Researchers can take two approaches. The first is to look at the environments of the storms as proxies for the storms themselves and then say how those are changing. Despite being unable to resolve the individual storms or their lifting mechanism in climate models, we can predict the large-scale environment in which these storms form. In one study over Europe¹⁴, the environments in which severe convective storms form in a historical time period are compared to that 100 years in the future using a climate model. In the future, there is a dramatic

increase in the number of environments favourable for convective storms, particularly in the spring and summer.¹⁴ In the winter, however, the frequency actually decreases. This study is another example of how the soundbite “extreme weather events will increase in the future” is too simplistic to explain where and when extreme weather events will change in the future. Of course, just because the environments favourable for storms increase does not mean that storms will also increase, so that caveat must be stated, as well.

The second approach is to try to explicitly model the storms with a high-resolution weather model, but using the large-scale conditions provided from a climate model, a process called downscaling. In one downscaling study over the United States¹⁵, the storms were identified when the vertical velocity exceeded 22 m s^{-1} , a proxy for convective storms. In the future, there is an increase in the probability of convective storms occurring across the southeast United States during winter, but a large decrease over the central United States during summer. In the highly populated northeast United States, convective storms increase in three of the four seasons. Again, the soundbite “extreme weather events will increase in the future” does not capture the spatial and seasonal variation in how these projected changes may manifest.

This research leads to the fifth set of lessons in a user’s guide to climate change and extreme weather. If climate modelling was used to understand the future, was the extreme weather event simulated directly or were proxies used? If proxies, how close do the proxies relate to the actual event?

What about the impacts of these events in the future? Let’s look at the most violent tornado outbreak in western European history: 24–25 June 1967.¹⁶ Seven strong and violent tornadoes crossed France, Belgium, and the Netherlands, damaging or destroying 960 homes, causing 232 injuries and 15 fatalities. Since 1967, the population has increased and cities have developed. If the exact same storms were to hit tomorrow, the built environment and population has already changed, leading to more damaged buildings and more affected people. What would this 1967 tornado outbreak do in a modern 2017 environment? That was the question that we answered in a series of papers.^{16,17}

Using archival evidence, researcher Dr. Bogdan Antonescu reconstructed the damage tracks of the tornadoes as best as he could.¹⁷ Then, he took these shape files in a geographic information system and dropped them down onto the buildings database on OpenStreetMaps and the population from the Gridded Population of the World dataset. Then, applying a range of relationships in the published literature on the

ratios of injuries to fatalities in tornadoes, he found that 24,990 buildings would be impacted, with 255–2580 injuries and 17–172 fatalities. If we took these tornado tracks and moved them around in increments of 0.1° latitude and longitude (11 km), out to 55 km in each way, we could end up with as many as 146,000 buildings impacted and 2550–25,440 injuries and 170–1696 fatalities. Thus, to understand the impact of changes in the future in extreme weather caused by climate change, we also have to understand the changes in the distribution of population and buildings, infrastructure, etc., because both could be potentially affecting the resulting damage.

This research leads to the sixth set of lessons in a user's guide to climate change and extreme weather. Impacts of storms in the future will be affected by more than just climate change. They will also be affected by a changing population, changing built environment, sea-level rise, land-use changes, etc. A balanced perspective requires consideration, not only of the changing climate, but also non-weather-related changes.

How do we communicate the effect of climate change on extreme events?

Improving communication of the effect of climate change on extreme events must start with the realisation that the statement “Climate change has produced more extreme weather” is too simplified, too vague, and thus makes no sense. Therefore, do not say it yourself, and when others say it, get them to qualify their claims. On the other hand, a headline such as this is scientifically accurate, but more of a mouthful: “Anthropogenic climate change [has changed/will change] the [frequency/intensity/etc.] of [weather event] by [X times/X%].” For example, “Anthropogenic climate change will reduce the frequency of environments favourable for summertime convective storms in the southeast United States by as much as 50%.”¹⁵

We need to find better ways to communicate scientifically accurate, but nuanced, information more readily and not slip into soundbite mode simply because it is easier to do. Moreover, we must become more effective at translating scientific research into the public sector. The release of the Sixth Assessment Report from the Intergovernmental Panel on Climate Change¹⁸ is a big improvement from its predecessor by using better graphics to communicate the complexity of climate-change science to a general audience.

Thus, here is my guide for how to interpret media statements about extreme events and climate change.

1. Does the headline or news story hype or misrepresent the results from the scientific article?
2. Is it the present (based on data) or the future (based on projection)?
3. What is the metric used (e.g., frequency, intensity, damage)?
4. If data were used, how complete is the data source? How large is the inter-annual variability?
5. If climate modelling was involved, can the event be simulated explicitly or were proxies for the events used?
6. Because the impacts of climate change are also affected by societal effects (e.g., changes in population, at-risk properties), are they properly accounted for?

Asking yourself these questions based on the news story will help better shed light on the validity of such claims made by climate scientists, the media, or both.

Acknowledgements

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Design and Operation of Dams

DAVID HENTHORN BROWN

11 February 2021

A reservoir is defined as ‘a structure designed or used for collecting and storing water and a raised reservoir is one above the natural level of the surrounding land’¹. There are around 2,000 regulated reservoirs in England, 200 in Wales, 300 in Scotland and 150 in Northern Ireland, a total of about 2,650 in the UK.

Reservoirs are a major part of the public water supply network but they are also used for a range of other purposes.

Early history

Early water mills, known as Norse mills, used fast flowing rivers and streams in hilly areas, to generate power by turning small horizontal wheels. In less hilly places with slower flowing streams, weirs were built to raise the level of the water, which was channelled by a leat to an overshot wheel on a horizontal axis at a mill further down the valley. The principles used for the weirs, channels and sluices were scaled up and developed for reservoir construction.

In the 18th century, it became fashionable for the aristocracy to surround their houses with idealised natural landscapes, including artificial lakes (Figure 1). The height of such dams was generally modest, but the embankments could be quite sophisticated in design using puddle clay to make them watertight.² John Grundy constructed such a dam at Grimsthorpe Park, Lincolnshire in 1730 to provide a landscape feature.

Canals

The first large storage reservoirs were built to supply the canal system which developed in the late 18th Century to support the transport needs of the Industrial Revolution³. Industry, before the age of steam, was mostly powered by water, so there was the potential for conflict if the canals were to take too much water in dry periods. Water could be stored in reservoirs during the wetter parts of the year and used to supply the canals in the drier summer months, allowed uninterrupted navigation and avoiding problems for the mills.



Figure 1: Garden Lake, Stourhead, Wiltshire built in 1750 with a dam 7m high (now National Trust).

The earliest example of a canal reservoir is Seeswood Pool, completed in 1764 for the Newdigate Canal in Warwickshire.⁴ The oldest still in use is Townhead Reservoir, completed in 1773, on the Forth & Clyde Navigation near Kilsyth in the Scottish Lowlands.⁵ John Smeaton (1724-1792), the engineer for Eddystone Lighthouse, was responsible for Townhead Reservoir. The last canal reservoir to be built in England was at Winterburn for the Leeds & Liverpool Canal (Figure 2). It was first filled in 1891 and has a dam 25 m high, the tallest canal reservoir embankment in the UK.⁶ Two further canal reservoirs, Dail Loch and Loch na Bric were built in the 1930s for the Crinan Canal in Scotland.⁷

Drinking Water

Industrialisation led to the movement of population to expanding urban areas such as Manchester. Inadequate and polluted water supplies resulted in diseases such as cholera becoming endemic. The provision of clean drinking water became imperative. Private water companies, and later local authorities built storage reservoirs in rural areas, often in hills remote from the conurbations with their polluted rivers and groundwater.



Figure 2: Winterburn Reservoir, near Gargrave, Yorkshire; Engineers Henry Rofe and Edward Filliter.

Manchester, a major city by the beginning of the 19th Century, was supplied with potable water from Gorton Reservoirs from 1826.⁸ Additional supplies were soon needed and six reservoirs were built in Longdendale between Mottram and Woodhead between 1848 and 1884.

In 1894, the level of Thirlmere in the Lake District was raised behind a dam and water was conducted by gravity to Manchester along a 155km long aqueduct.⁹ A further reservoir, Haweswater, was built in Mardale in the Lake District between 1929 and 1935. Another aqueduct was built from Haweswater to new reservoirs in Heaton Park to the north-west of the city.

Once water is treated, it is stored in covered tanks known as service reservoirs. These are usually situated on high ground to provide the necessary pressure to deliver the water through the supply network of mains and distribution pipes.

Other uses for reservoirs

Sir William Armstrong, a major industrialist on Tyneside, was an early exponent of hydro-electric power. In 1870, he built a reservoir, Tumbleton Lake, on his Craggside estate in Northumberland to provide the water

pressure for his turbines.¹⁰ He furnished his house with electric lighting and used electrical machinery in his estate workshops. In 2015, the National Trust installed an Archimedes screw to continue the tradition of renewable energy generation at Craggside.¹¹

In 1943, the North of Scotland Hydro-Electric Board was established to generate electricity in the Highlands, 'Power from the Glens'.¹² The Board's successors, Scottish & Southern Energy, have 77 reservoirs (Figure 5). The challenges associated with building these dams and their associated tunnels and aqueducts are described vividly in the book *The Hydro Boys*.¹³

Climate change has exacerbated urban flooding. One approach to the problem is temporary storage of flood water above urban areas, released later when the flow in the river has reduced. In normal conditions these flood storage reservoirs stand empty and can be used for amenity purposes such as sports fields. An example is the Salford Flood Alleviation scheme in Kersal, completed in 2018.¹⁴

Engineers

The earlier canal reservoirs had been designed by self-taught engineers, such as James Brindley (1716-1772), who used water mill experience to build canals and supply them with water. By the time the drinking water reservoirs were built, the Institution of Civil Engineers¹⁵ had been established and infrastructure was designed and built by professionals.

John Frederick Bateman (1810-1889), was a consulting engineer who specialised in the construction of dams and reservoirs.¹⁶ Early in his career, he had worked with Nicholas Brown and James Simpson (1842-1843) on the construction of Gorton Reservoirs. He was the lead engineer for the Longdendale project, where he was assisted by his pupil George Henry Hill (1827-1919). Hill established the firm G H Hill and Sons in Albert Square, Manchester¹⁷ and was the engineer to the Thirlmere project. His son, Ernest Prescott Hill was one of the resident engineers.

Dams and reservoirs remain a specialised aspect of civil engineering. The Institution of Civil Engineers maintains professional standards and qualifications, and advises Government on reservoir matters. The British Dam Society¹⁸ is one of the Institution's associated societies and represents Britain on the International Commission on Large Dams.¹⁹ These bodies provide training and continuing professional development including conferences, co-ordinate research and publish advice and guidance on reservoir management. In 2019, the British Dam Society published a book, *Reservoir Management*, giving guidance to owners and engineers on all aspects of managing all types of dams and reservoirs.²⁰

Types of Dam

The majority of UK dams are earth embankments (Figure 3). Earlier dams were made of locally sourced earth, preferably with a clay content. These 'homogeneous' dams were refined through experience and developed into the 'Pennine type' dam, with an impermeable central core of puddle clay. The core may be taken down to a suitable stratum in a cut off trench, to prevent water passing under the dam. An early example was the Trent & Mersey Canal's Rudyard Reservoir in Staffordshire, built between 1797 and 1800 to designs by John Rennie (1761-1821). Pennine type dams continued to be built until the 1960s.



Figure 3: Silent Valley embankment dam in Northern Ireland (1923-1932); Engineer F W McCullough.

Until the mid-19th Century, no mechanical plant was available to assist construction. The work was done by hand with spades, barrows and horse drawn carts. Large numbers of workers were needed and temporary accommodation had to be provided, often in remote areas.

Where a foundation of rock was available, it was possible to build dams of masonry. The outer faces were of squared stone blocks and the heart of the dam was made of 'cyclopean rubble', comprising large rocks



Figure 4: Masonry dams Craig Goch 1892 (top); the uncompleted Dol-y-Mynach dam (1904) (bottom), showing cyclopean rubble construction; both in the Elan Valley and part of Birmingham's water supply system; Engineer James Mansergh.



Figure 5: A concrete dam, Beinn a' Mheadhoin Dam in Glen Affric, built in 1951 by the North of Scotland Hydro-Electric Board

known as 'plums', surrounded with carefully packed concrete (Figure 4). Thirlmere and Liverpool's Vyrnwy dams were built in this way.

When stronger and more durable concrete became available, it became possible to dispense entirely with the masonry (Figure 5). The amount of concrete required for construction can be reduced by supporting a relatively thin wall with downstream buttresses or by using an arch to carry the forces into the valley sides. Haweswater dam was the first to use hollow concrete buttresses.



Figure 6: Llyn Brianne (1968-72), a rockfill dam, Engineer Binnie & Partners.



*Figure 7: Spillways, Winterburn Reservoir (top);
Silent Valley (bottom)*

Threats to dams and reservoir failures

The consequence of an uncontrolled escape of water from a reservoir can be very severe indeed. The threats and possible failure mechanisms must be understood and addressed.

There were many dam failures in the 19th Century, mostly as a result of floods. Hydrology was an undeveloped science at that time. Reservoirs were often not provided with adequate overflow spillways (Figure 7) and the dams were insufficiently high to contain the rise in water level in flood conditions. Most older reservoirs have had spillway improvements and had their dams raised to meet modern standards. Dams must remain safe even in extreme conditions, typically floods with an annual probability of occurrence of 1 in 10,000 (‘the 10,000 year flood’).²¹

Spillways must be capable of operation without fear of structural failure. A masonry spillway cascade at Ulley Reservoir near Rotherham broke up during a flood in 2007.²² In August 2019, a reinforced concrete secondary spillway, built in 1970 over the dam of Toddbrook Reservoir in Derbyshire, started to break up in flood conditions. Without concrete to protect it, the earth embankment started to be washed away. Some 1,500 people were evacuated from the town of Whaley Bridge, whilst the water level was reduced using the outlet valves and pumps and by diverting water around the reservoir. The material which had been washed away was replaced by the RAF with aggregate bags dropped into the void with great skill using Chinook helicopters (Figure 8).



Figure 8: Toddbrook Reservoir, Whaley Bridge; use of helicopters to repair the damaged dam.

There have been two investigations into the incident. The first was carried out by Dr. Andy Hughes, for the Canal & River Trust, the owners of the reservoir.²³ The second was by Professor David Balmforth on behalf of Defra.²⁴ At the time of the incident, Toddbrook Reservoir had been fully compliant with dam safety regulation, and changes to legislation and guidance are likely to follow from the lessons learnt. Since the incident, Toddbrook Reservoir has been kept almost empty and the damaged spillway has been raised in level so as allow a 10,000 year flood to be contained in the reservoir basin without overflow. A replacement spillway is to be built, the reservoir refilled, and put back in service.

Earth embankments must be protected from wind and waves which will cause erosion. Older dams were often paved with dry stone pitching (Figure 9). Nowadays rip-rap, large pieces of rock, is normally used to absorb wave energy. Many earth dams have stone or concrete wave crest walls to prevent spray weakening the embankment.

Dams must be stable and not be at risk of sliding or overturning. Concrete dams are subject to buoyancy effects from water pressures building up under their foundations. These pressures must be relieved by drainage. The stability of earth embankments is a more complex matter. Steep slopes may slip or crack and settlement will reduce the height of the dam over a long period of time. Although larger magnitude earthquakes are rare in the UK, the very high consequences of reservoir failure means that seismic risk must be taken into account.

An insidious threat to embankment dams is internal erosion. Water seeping through the embankment may wash out fine soil particles which will increase the rate of leakage. In 1865 Sir Robert Rawlinson said

Water is, an unsleeping antagonist, and is ever searching and ready to puncture the weakest point. Time brings decay to material, such as timber and iron, but time does not lessen the power of water, under pressure, in the least degree; the law of gravity endures; but stone, timber, earth, and other solids inevitably crumble and decay'.²⁵

This is as true today as it was then. It is important that a close eye is kept on earth dams to detect early signs of problems so that precautionary action may be taken long before the point of no return is reached.

Consequence of failure

The uncontrolled escape of water from a reservoir will result in very serious consequences for life and property downstream. In the event of a dam breach, a tsunami like wave will travel down the valley as the reservoir empties. There were many dam failures in the 19th Century

Design and Operation of Dams



*Figure 9: Wave protection pitching at Bosley Reservoir, Cheshire (top);
rip-rap at Sulby Reservoir, Northamptonshire (bottom)*

during the period when reservoir engineering was developing. The failure of Bilberry reservoir in 1852 killed 81 people in Holmfirth, Yorkshire. Twelve years later, the Dale Dyke Dam disaster, the 'Sheffield Flood', led to the loss of 244 lives and widespread destruction of property.²⁶ This was the worst reservoir disaster in the UK.

There was further loss of life due to dam failures in the 20th Century. In April 1925, a dam at Skelmorlie on the Ayrshire coast breached, resulting in the loss of five lives. In November the same year, 16 people were killed, when Eigiau Reservoir breached, resulting in the overflowing and failure of Coedty reservoir further down the valley above the village of Dolgarrog in the Conwy valley.

Legislation

The 1925 failures led to reservoir safety legislation. The Reservoirs (Safety Provisions) Act 1930²⁷, introduced safety requirements for reservoirs of a greater volume than Skelmorlie, five million gallons (25,000 m³). All regulated reservoirs needed a statutory inspection, not less frequently than every 10 years, by an engineer from an expert panel appointed by government. Many reservoirs had spillway improvements carried out as 'measures in the interests of safety' during the 1930s. Statutory inspection is still a key part of reservoir safety management.

The Reservoirs Act 1975²⁸ improved, updated, and replaced the 1930 Act. Enforcement Authorities, initially the county councils, were introduced. The regulators are now the Scottish Environment Protection Agency (SEPA), National Resources Wales, and in England, the Environment Agency. A new panel of Supervising Engineers was created. Every regulated reservoir must have an engineer appointed 'to supervise the reservoir and keep the undertakers (the party responsible for reservoir safety, usually the owners) advised of its behaviour in any respect that might affect safety'.

The Flood & Water Management Act 2010²⁹ introduced a risk based approach to regulation. Devolution led to the Reservoirs (Scotland) Act 2011³⁰ and the Reservoirs Act (Northern Ireland) 2015³¹.

Risk Management

The risk of reservoir failure, a combination of likelihood and consequence, is managed by statutory inspection and supervision, monitoring and surveillance, maintenance, risk assessment, and intervention in the form of engineering works or precautionary action.

Statutory inspection is undertaken by an independent engineer from the All Reservoirs Panel, not less frequently than every 10 years.

The Inspecting Engineer will check the dam and its ancillary works in considerable detail, consider failure modes, the effects of extreme floods, earthquakes and the stability and integrity of the dam. It may be considered that measures ‘in the interests of safety’, sometimes studies but often heavy engineering works, are necessary and these must be carried out in a timely way. The monitoring and maintenance regime and record keeping requirements will be set out.

The Supervising Engineer will typically visit the reservoir twice a year, accompanied by personnel from local operational teams who check the dam, typically twice a week, to monitor its performance. They will look for signs of leakage, movement, sinkholes, erosion, or other damage. Vegetation must be managed so that such indicators are not hidden by long grass or scrub.

Leakage is monitored using measuring weirs (Figure 10) and the internal performance of the embankment may be assessed using instrumentation such as piezometers. Settlement and movement of the embankment is measured using surveying techniques (Figure 10) or sometimes by satellites. The Supervising Engineer will monitor trends using graphs of the data.

In 2013 Defra published *A Guide to Risk Assessment for Reservoir Safety Management*³², updating the *Interim Guide to Quantitative Risk Assessment for UK Reservoirs*³³. The likelihood of each failure mode which might result in a catastrophic escape of water, can be quantified as an annual probability, allowing proactive decisions to be made as to what proportionate level of investment would be appropriate to reduce the overall risk.

Often, further study is needed to better understand the dam and its behaviour. Investigation techniques include boreholes, the use of geophysics and groundwater temperature measurement.³⁴

Should an incident occur, it is important to have a plan setting out what must be done. Defra gave guidance on the subject in 2006³⁵ and 2017³⁶. In April 2021, the Secretary of State made a Direction³⁷ requiring plans to be prepared for all reservoirs in England. A reservoir emergency plan will include an on-site plan, flood maps, communication arrangements and an off-site plan. The on-site plan describes the practical steps to be taken on site, normally lowering water levels using valves and pumps, to reduce the likelihood of failure and to minimise the effects should failure occur. The off-site plan sets out the actions that the emergency services with take, such as evacuating the population at risk to a place of safety.

It is important that reservoirs have sufficient outlet capacity and that the valves are in good working order. Defra and the Welsh Government



Figure 10: Monitoring - measuring weir at Killington Reservoir, Cumbria (top); settlement monitoring at Brent Reservoir, London (bottom)

have given guidance³⁸ on the desirable rate for reduction in water level. Where there are insufficient outlets, additional capacity may be installed, often in the form of syphons. Valves are tested routinely to ensure that they remain in working order and do not get blocked by silt.

Conclusions

The average age of a reservoir in the UK is over 100 years. Some are much older and few were built with every feature that would be desirable in a modern dam. The regulatory framework, the panel engineer system and physical interventions have meant that there has been no loss of life in the UK since 1925 due to reservoir failure. There have however been several failures without loss of life and some near-misses such as that at Toddbrook. Continuing research will give better guidance to reservoir owners and engineers. It is also to be expected that the regulatory framework will develop and further reduce the likelihood of reservoir failure.

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All photographs were taken by the author.

David Brown is a 4th generation Mancunian, his great-grandfather and grandfather having moved to Rusholme in the 1920s to work in the glue industry. David's father was an industrial chemist and later a teacher and lived in the Manchester area for most of his life.

David was introduced to canals in the 1960s when his father read that Marple Aqueduct was to be pulled down, organising a visit before it was too late. The aqueduct was in fact eventually restored and the canal reopened.

UMIST's Saturday afternoon lectures included canal-related talks by Dr. D E Owen and Dr. C T G Boucher, which further stimulated his interest in canal engineering.

Having studied Engineering Science at Durham University, he began his career designing roads and bridges at Durham County Council. He became a chartered civil engineer during this time and in 1983, took up a post in the Bridges Section of the British Waterways Board in Leeds, designing swing bridges. His career with BW, which later became the Canal & River Trust, took him to Birmingham, where he worked in wider aspects of canal operation and engineering. Eventually, he specialised in reservoirs and in 2000 was appointed to the Panel of Supervising Engineers established under the Reservoirs Act 1975. He became responsible for reservoir safety at BW in 2006 and became a Fellow of the Institution of Civil Engineers in 2010.

Peter Clare: A Face in the Crowd

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Members of the 'Lit and Phil' visiting the National Portrait Gallery can spend an exasperating hour searching for faces with connections to the Society. John Dalton (1766-1844), of course, can be found, as can Richard Cobden (1804-1865) who became a member before his name became synonymous with the movement to repeal the Corn Laws, but other individuals whom one might expect to find – Thomas Percival, Thomas Henry, James Prescott Joule, Osborne Reynolds and Ernest Rutherford – appear not to warrant a place on the gallery walls, prompting questions about the place of science in the national historical narrative. Yet, one other member of the society can be found. He is Peter Clare (1781-1851), who if remembered at all today it is as Dalton's close friend, a friendship that became even more important after the stroke in 1837 that impaired Dalton's speech and mobility. To find Clare, one has to search out one of the largest canvases in the gallery, Benjamin Robert Haydon's 'The Anti-Slavery Society Convention, 1840', where he is one of the faces in a crowd of abolitionists.

Even given the recent interest in visual representations of slavery – Turner's 'Slave Ship' was painted around the same time – one might place Haydon's canvas into that large category of worthy, but dull, historical paintings. However, it does warrant more careful study. Commissioned by the British and Foreign Anti-Slavery Society, it depicts the opening in London of what was one of the first international meetings of anti-slavery reformers. It provided an opportunity to acknowledge the struggle that resulted in abolishing Britain's direct involvement in slavery – the principal figure in the painting being Thomas Clarkson (1760-1846) who had been a prominent abolitionist since the 1780s – whilst also recognising the ongoing campaign to end slavery in other countries. The convention was not without controversy, and in recent years historians of the women's movement have understandably focused on that part of the painting that shows female abolitionists, including American delegates, relegated to the visitors' gallery rather than seated in the main body of the hall.¹ Clare is one of the 139 named individuals in the painting. His inclusion is a reminder of his involvement in one of the defining campaigns of the age, suggesting that he deserves to be remembered for being more than Dalton's friend.



Figure 1. B. R. Haydon, 'The Anti-Slavery Society Convention, 1840' (1841). The meeting was held in the Freemasons' Hall, London. [Image courtesy of National Portrait Gallery]

Completed in 1841, the public reception to the painting disappointed Haydon, further disheartening a thin-skinned artist who had an inflated view of his own talents. It was exhibited first in London before going on a provincial tour. In Manchester it was to be part of a larger event, being lent by the anti-slavery society for a bazaar held in the Theatre Royal to raise funds for the Anti-Corn Law League, a pressure group that was all too familiar with the methods of mobilising public opinion – organising meetings, raising funds, petitioning parliament – honed by the anti-slavery movement. Manchester critics were more polite than those in London but still considered Haydon's work disappointing: 'The conception is noble; but the artist has been weighed down by the insuperable objects presented by the work in its execution'.² Somewhat unexpectedly, neither Clare nor the two other Manchester abolitionists named in the painting – the Baptist minister, John Birt and the Quaker, Isaac Crewdson – were mentioned in the local newspaper reports.



*Figure 2. Peter Clare, centre, detail from B. R. Haydon, ‘The Anti-Slavery Society Convention, 1840’ (1841)
[Image courtesy of National Portrait Gallery]*

Peter Clare was born in Manchester in 1781, at a time when the town was already in the grip of the industrial revolution. His father, also Peter Clare (1729-1799), came from Hatton, south of Warrington, but lived most of his adult life in Manchester, establishing a business as a watch and clock maker, an occupation with skills which were in increasing demand. He is listed in Manchester’s first commercial directory (published 1772) as a ‘clock and smoke-jack-maker, Deansgate’. The first trade requires little explanation as examples of his long-case clocks have survived and testify to his considerable skills, whereas little is known about his smoke-jack. Clare invented an improved model of this common kitchen appliance, a machine which allowed meat to be roasted both horizontally and vertically. Overlooked by historians studying the homes of the rapidly increasing Georgian middle classes, Clare took

out a patent to protect his invention, evidently aware of its commercial potential.³ Clare's mechanical skills were not merely empirical, for by the late 1770s he was one of a small number of local mechanics providing lectures on scientific subjects, advertising the setting up of 'a philosophical school' for instructing young people in the principles of mechanics, electricity, magnetism and pneumatics.⁴ These were years, as historians have argued, in which the practical and theoretical interest in science and engineering was expanding, not least in Manchester which, of course, saw the founding of the Literary and Philosophical Society in 1781.⁵ However, Clare senior – described in his funeral notice as 'a man of intrinsic merit as a mechanic and a philosopher' – did not find a place in that small elite group of professionals who established what became one of the leading provincial scientific societies.

As his only surviving son, Peter Clare continued the family business, specialising in making, installing and maintaining clocks, including turret clocks. In the absence of business records there is only a very incomplete list of even his public clocks which included churches (All Saints, Chorlton on Medlock and St Philips, Salford) as well as industrial and commercial buildings (Thomas Potter's warehouse, Fountain Street and Wovenden's Dining Room, Market Street). Following the adoption of railway time in 1847, Clare installed what was the town's principal regulatory clock, located in the foyer of the town hall in King Street.⁶ Knowledge of his domestic timepieces is also incomplete, although he was the maker of one of the town's most unusual clocks, Dalton having asked him to make a timepiece for the Literary and Philosophical Society which would only strike once in every twenty-four hours at 9.00pm, at which hour Dalton required society meetings to end.⁷ In the local commercial directories Clare is generally identified as a clock maker, though it is noteworthy that in Pigot's 1841 directory of Manchester and Salford he is listed as a 'turret clock maker and bell hanger'.⁸ That clock making may have become less important to the business is also suggested in the 1851 census returns, the year of Clare's death, where he gives his occupation as 'bell hanger employing five people'.⁹ Throughout these years he lived and worked in Quay Street.

Clare absorbed his father's interest in science, assisting him from an early age in his lectures. This aptitude developed, bringing him to the attention of the Literary and Philosophical Society, which saw him elected a member in 1810. One of its youngest members he soon became one of its most active, filling the busy position of secretary from 1822 to 1843, for the majority of those years sharing the work with John James Tayler, minister at the Mosley Street Unitarian chapel. This

position extended his circle of acquaintances, both locally and in the wider scientific community, at a time when gentlemen scientists were still in the majority. Astronomy became his principal interest and he was elected Fellow of the Royal Astronomical Society in 1839. He did not publish in either the *Journal of the Astronomical Society* or the *Manchester Memoirs*. Very occasionally, he contributed accounts on astronomy in the local press, as in 1834 when he provided a record of his observations on the Aurora Borealis, a phenomenon that also interested Dalton.¹⁰

Peter Clare, like his father, was a member of the Society of Friends, attending services in the Meeting House which was at the corner of Jackson's Row and Deansgate on the site of the original Quaker building of 1693. A new Meeting House was erected at the corner of Dickenson Street and South Street in 1795 to which Dalton subscribed 5 guineas for the purchase of the land. The present building is on the same site extended to Mount Street and dates from 1830. Dalton gave sums of £50 and £25 to this.¹¹ It was here that the British Association met in 1842 though in recent years more attention has been paid to the graveyard which served as a refuge for people escaping from the massacre in St Peter's Field nearby in 1819.

For both Clare and Dalton, their Quaker faith was a defining factor in their lives. The congregation at Mount Street, although small in numbers – never more than 400 members – was to have a considerable influence in the town. Members, connected by marriage and by business, and for many years excluded from holding political positions, became prominent in many social movements, their active commitment to philanthropy making them leading figures in a number of public institutions. It was a church which was to be marked by increasing tensions as traditional Quietists increasingly deplored the actions of more outgoing evangelical Quakers who were willing to question traditional doctrines which cast believers as a 'peculiar people', distinguished by their dress and speech, living their lives in semi-isolation from ordinary society. It was principally the evangelically inclined Friends who became more deeply involved in that outside world, most obviously in the campaigns for the abolition of slavery and prison reform. But these differences deepened, expressing themselves in other forms. When, for example, at the end of the 1820s, it was decided to rebuild the Manchester Meeting House, Richard Lane's neoclassical facade was regarded as too ostentatious for those members who held strictly to ideals of simplicity and reserve. These tensions erupted in Manchester with the publication of Isaac Crewdson's *A Beacon to the Society of Friends* (1835). The result was a schism, Crewdson

persuading over 40 members to establish a new chapel, the Evangelical Friends Meeting House in Grosvenor Street, near All Saints.¹² Clare was sympathetic to the Evangelical Quakers but decided not to take the step of breaking away, choosing to remain in the church that he had been brought up in. Divisions within the Society of Friends did not disappear, as was evident at the burial of the town's leading citizen in 1844. Clare decided to take part in Dalton's funeral procession, unlike those Friends who did not, appalled by the scale and pageantry of a public funeral, a ceremony which included the unprecedented act for a private citizen of the body being laid out in the town hall.

Details of how Clare and Dalton's friendship developed are few but as they both attended Mount Street they would have known each other long before Clare joined the Literary and Philosophical Society. Dalton's scientific discoveries made him the most well-known man in Manchester, his status as a public figure recognised by the remarkable act of commissioning whilst he was still alive of the town's first public statue, a marble sculpture placed in the recently completed Royal Manchester Institution (now Manchester Art Gallery).¹³ Unsurprisingly, Clare was among the subscribers supporting the project. Dalton's celebrity was such that by the 1840s there was concern that the overuse of his name for new streets was leading to confusion in locating addresses.

Dalton became more reliant on Clare as his health deteriorated, and it was after his stroke that Clare was widely recognised as his regular helpmate. He would support Dalton when walking in the town, an image that remained sharp in the memory of Josiah Slugg who recalled that Clare was 'always remarkably neat and well dressed in a suit of black, wearing knee-breeches with silver buckles, which showed his fine, well-shaped legs, and a broad brimmed hat. His linen was of the purest white and he presented a clean, happy, and cheerful-looking face.'¹⁴ The closeness of their relationship was particularly evident on those occasions when Clare spoke on behalf of Dalton. In 1837, when Dalton was too ill to travel to Liverpool to attend the British Association meeting, it was Clare who read his paper concerning the production and measurement of carbonic acid in the atmosphere.¹⁵ Dalton was able to attend the annual meeting of the Manchester Mechanics' Institution in 1840 but once again it was Clare who spoke, on this occasion reporting Dalton's ongoing researches into the crystallisation of salts.¹⁶

Dalton was evidently content to allow Clare to report on his research to audiences eager to know about the scientist's current investigations. It was to be the same in 1842 when Manchester finally hosted the British Association. Unable to take on the duties of president of this outstanding

gathering of scientists, Dalton, once more, relied on Clare to speak for him. Clare also made it possible for Dalton to be captured by the new daguerreotype photographic process, Clare keeping one of the three images made.¹⁷ As is well known, Clare was to be in regular attendance on Dalton in his final years, assisting him with his correspondence and even recording the details of the medicines taken for his illness. Clare's final public acknowledgment on behalf of Dalton came in July 1844 when the Literary and Philosophical Society, having received the 50th annual report of the meteorological observations kept by Dalton, presented him with an engrossed vellum testimonial in recognition of his extraordinary dedication in recording Manchester's weather since 1793.¹⁸

It would be to stretch the historical record to cast Clare as Dalton's Boswell but, arguably, no other person knew him better. He was one of Dalton's executors and legatee. Biographers can only regret that he did not write a memoir, which was written belatedly by his literary executor, W. C. Henry, and found wanting by many.¹⁹ But to simply depict Clare as Dalton's faithful companion is misleading. As Haydon's painting suggests, Clare was closely involved in the anti-slavery movement.²⁰ He was still a child when Manchester became prominent in the campaign against the slave trade. Opposition to slavery was being voiced in the town in the early 1780s but it was the talk delivered by Thomas Clarkson in the Collegiate Church (now Manchester Cathedral) in 1787 that is widely regarded as igniting the national campaign for abolition. Manchester became an important provincial centre, a model for other communities. Religious, political and economic connexions can be traced between the members of Manchester's first anti-slavery society but it is worth noting that 13 of the 31 original committee members belonged to the Literary and Philosophical Society, of whom Thomas Percival, John Ferriar, Thomas Barnes and Thomas Cooper were important figures in the local campaign. Other Manchester abolitionists, notably Thomas Walker, also joined the society.²¹ We do not know but one can be reasonably confident that Peter Clare senior would have been in the congregation that heard Clarkson's inspirational address.

The abolition of slavery campaign became central to the identity of the Society of Friends; of the 12 founding members of the national Society for the Abolition of Slavery, nine were Quakers and three Anglicans. Quakers were present in all levels of the organisation. This included female members who were active in fundraising, collecting signatures for petitions and promoting consumer boycotts against slave-grown products, beginning with sugar and rum. There were to be disappointments in the following years: William Wilberforce's First Bill

to abolish the slave trade was defeated in the House of Commons in 1791 but victories eventually came with the passing of the landmark legislation of 1807 and 1834. Abolitionists knew that claims that slavery had completely ended in British controlled territories were misleading and the campaign continued, petitioning and lobbying for an end to the system of apprenticeship which was finally declared illegal in 1838. Abolitionists then focused their attention on slavery in other countries.

That Peter Clare should support these campaigns is no surprise, what is remarkable is the extent of his involvement. Over time Clare became a leading figure in the local anti-slavery society, attending the round of monthly meetings, arranging public lectures and organising petitions. Clarkson had returned to Manchester in 1823 to re-ignite the campaign, alerting people to the fact that the Slave Trade Act of 1807 was only a partial measure. Clare busied himself in the campaign. He was not a powerful speaker but he was to be found on the public platform seconding motions and providing votes of thanks, and, most importantly, working behind the scenes to ensure that public interest in the cause was maintained. He was also a member of delegations that went to London to present petitions, taking the opportunity to assess progress and discuss tactics with London abolitionists.²² Clare could be relied upon to publicise the cause, as when in 1834 he turned to a sympathetic newspaper to publish a long letter he had received from George Thompson, then a little known abolitionist, about his first missionary visit to establish anti-slavery societies in Massachusetts and New York. (Thompson is also in Haydon's painting.) As in the 'Lit and Phil', this work brought him into contact with local supporters as well as the main leaders of the movement. In Manchester he would have known individuals such as the Pendleton Quaker, John Wadkin who was in close contact with Clarkson. Clare was also sympathetic, as were many Quakers, to the work of the British India Society whose northern branch was founded in Manchester in 1840. Its proposals to cultivate cotton to improve the 'conditions of our fellow-subjects, the natives of British India' attracted attention in 'Textile Lancashire', holding out the lure of an alternative supply to slave-grown cotton.²³

In helping to organise support in Manchester Clare would also have been aware of the strength of pro-slavery sentiment in the town and the tactics used to frustrate abolitionists. This appears to have been the case in 1824 when the boroughreeve and constables refused to hold a public meeting on the question of slavery. Such meetings could become rowdy gatherings. This was certainly the case in 1838 when working-class radicals were determined to move the debate away from the apprenticeship system in the West Indies to the conditions of workers in

Manchester cotton mills. Clare would also have had knowledge of those local families who were slave owners or who had inherited slave money.²⁴ These included Eleanora Atherton, the richest woman in Manchester, part of whose fortune was derived from slavery: she received £13,639 - 6s - 5d in compensation for 726 slaves on two Jamaican plantations. He would also have known of the local connections of individuals such as James Heywood Markland who worked untiringly for the innocuously named Literary Committee, the all-important propaganda engine of the Committee of West India Planters and Merchants.²⁵

Biographers have not investigated Dalton's involvement in the anti-slavery movement but we can assume that he was sympathetic to the cause. When, in 1838, the Manchester and Salford Anti-Slavery Society sent yet another petition on negro slavery to London, it was understandable that in presenting it to parliament Henry Brougham, the Lord Chancellor, should draw attention to the first signature, that of 'one of the greatest philosophers of modern days', a man who 'at the age of upwards of three-score and ten, came forward in a truly Christian and philosophic spirit, and raised his voice against the continuance of the evil.'²⁶ Given Dalton's poor health at this time, it seems likely that it was Clare who ensured that he signed. Further work is required to identify the extent of Dalton's support for the campaign against the slave trade, including the years before he settled in Manchester. One suspects, but will probably never be able to confirm, that his housekeeper in Faulkner Street would have followed the practice in Quaker homes of ensuring that no slave-grown sugar was purchased.

Clare's interest in social questions was not limited to the abolition of slavery. He supported the Quaker-led peace movement that took root after the Napoleonic wars, a wishful crusade for 'universal and permanent peace' that argued for conflicts to be resolved by non-violent means. Adopting the organisation and methods of the anti-slavery movement, it struggled to convince people that war was unchristian in a society which placed its military heroes on pedestals.²⁷ Clare was also among those Quakers who took an active interest in the ongoing campaigns for parliamentary and local government reform; attending public meetings and signing petitions. Smoke pollution was another contemporary urban problem that attracted his attention and he is listed among the founder members of the Manchester Association for Abating Smoke Nuisances, one of the earliest anti-pollution societies.²⁸

Clare's involvement in the community was also to extend far beyond the 'Lit and Phil' to include the Mechanics' Institution and the Geological Society. His name is also to be found on the list of the



Figure 3. William Bradley's portrait of Peter Clare (1837)
 [Image courtesy of Manchester Libraries, Information and Archives]

founding members of the Chetham Society in 1843, his interest in history and books bringing him into that group of local bibliophiles of whom James Crossley is the best known.²⁹ This large circle of friends and correspondents provided opportunities to assist and help, as on the occasion when he arranged for the Manchester Natural History Society to receive a copy of the privately printed *Gleanings from the Aviary and Menagerie at Knowsley* (1846) which he had received from the Earl of Derby. Illustrated by the young and then unknown Edward Lear, it was a book that would have been a treasure in any library. His own library had no such bibliographical treasures but confirm that the range of his interests went beyond the scientific.³¹ He was sympathetic to many other improving educational and civic schemes in these years such as the movement to open public parks and the building of a ship canal between Liverpool and Manchester. Shortly before his death he was to

be found supporting the idea of establishing portrait galleries featuring local worthies in Manchester Town Hall and the recently opened Salford Museum.³²

Peter Clare never married and following a long illness which kept him largely housebound at his home in Quay Street for almost a year, he died on 24 November 1851. He was interred in the burial ground at Mount Street, the president, council and other members of the 'Lit and Phil' attending amongst a large number of personal friends. He could look back on his work in a town that during his lifetime had become a city known across the world. A clock maker by trade, he had become a well-known and regarded figure in that community. Whilst known principally for his close friendship with Dalton and his long association with the Literary and Philosophical Society, he was also respected for his involvement in supporting and furthering the work of many local institutions and causes that were shaping and re-shaping civic Manchester. Neither a forceful speaker nor writer, he was never to be among the leaders in these projects but his determination, commitment and sensibleness made him more than just a face in the crowd of supporters. An interest in science continued to the end. He continued Dalton's meteorological observations, and what may have been his last publication concerned a short record of electrical activity in a local thunderstorm.³³ Throughout his life he remained a member of the Society of Friends, able to reconcile ongoing concerns over doctrine and organisation with attendance at Mount Street. His evangelical sympathies however placed him amongst those Manchester Quakers who were willing to cooperate with reformers from other denominations. Historians of Manchester have long recognised the importance of nonconformist churches in its political and social reform movements but Clare's extensive involvement in those movements is a reminder that the Mount Street meeting house has tended to be underestimated, attention being directed towards other churches, notably the Unitarians who worshipped at Cross Street Chapel.

Clare could also look back with some satisfaction on his long involvement in the anti-slavery movement, though he would have acknowledged that slavery remained in different forms in many countries, including Britain. Manchester came to portray itself as a progressive moral force in the new industrialising world, not least in its support for abolition. But the reality, as Clare knew, was that the town was stained by slavery, slave-grown American cotton being consumed in ever increasing quantities in the mills of Manchester and its satellite towns. Those Mancunians who repeated with pride Disraeli's observation that

'Manchester was as great a human exploit as Athens' chose to ignore the tables recording raw cotton imports, statistics that indicated that the fortunes of both of these world cities depended in different ways on slave labour.

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Rajkumari Williamson Jones is a physicist, who has lectured and published on the history of science and technology, in particular about Manchester scientists, in volumes 127 & 128 of Manchester Memoirs and volume 57 (2003) of Notes & Records of the Royal Society. Her book, The Making of Physicists (1987) helped to establish the History of Physics Group of the Institute of Physics. She was instrumental in the restoration of Dalton's bomb-damaged papers.

Terry Wyke taught economic and social history at Manchester Metropolitan University, retiring in 2017. His publications include Manchester. Mapping the City (2018) (with Brian Rogers and Martin Dodge) and A Bread and Cheese Bookseller: James Weatherley (2021) (with Michael Powell).

Annals of Manchester, 2019

The idea of publishing an annual record of events in the Greater Manchester area along the lines of the much-consulted *Annals of Manchester*, compiled by William Edward Armytage Axon, was one of the final projects initiated by Professor Donald Cardwell before his death in 1998. That the publication of such a record will be of interest not only to present readers but future historians and researchers can hardly be questioned. Readers should note that Axon's *Annals*, covering the years to 1885, is now available on the internet. It is also fully searchable, yielding far more references than can be identified using the printed index, which is heavily weighted towards the names of individuals.

The entries below cover the period from the beginning of January to the end of December 2019.

Tuesday 1 January Mahdi Mohamud, 26, arrested following knife attack on three people, including a policeman, in Victoria Station. He pleaded guilty to a terrorist offence and three counts of attempted murder and was sentenced in November to life imprisonment.

Wednesday 2 January Julia Grant, aged, 64, died. Manchester transgender activist who featured in pioneer BBC *Inside Story* series (1980) charting her transition. Grant wrote about her life and campaigns in *Just Julia: The Story of an Extraordinary Woman* (1994). She owned the Hollywood Showbar in the Gay Village.

Tuesday 8 January Twelve teenagers arrested following fighting in Piccadilly Gardens in which one person was stabbed.

Thursday 10 January Dianne Oxberry, aged 51, died. She was well-known in her role as presenter of BBC regional news programme *North West Tonight* having begun her broadcasting career on BBC Radio 1 and BBC Radio Manchester.

Monday 14 January Manchester International Airport reported a record 28.2 million passengers in 2018. The airport had 201,239 take-offs and landings, a daily average of 550.

Sunday 20 January A mural in tribute to Sir Matt Busby unveiled at Old Trafford, marking the 25th anniversary of his death.

Wednesday 30 January Bomb disposal experts called to Oldham Road, Newton Heath to investigate a suspicious device in a vehicle during an

operation into serious crime. Three people were arrested and charged with possession of explosives, a firearm and drugs.

Snow caused suspension of all flights at Manchester International Airport.

Friday 1 February High Court ruled against North West Ground Rents Limited to carry out glass panel repair work on the first 22 storeys of Beetham Tower following long legal battle with Blue Manchester Limited, owner of the Manchester Hilton Hotel.

Monday 4 February Councillors Nasrin Ali (Crumpsall) and John Farrell (Higher Blackley) called attention to the 'Transport Poverty' experienced by residents in the north of Manchester compared with those living in southern wards of the city.

Thursday 7 February Albert Finney, film and theatre actor, died, aged 82. He was born in Salford, son of a bookmaker, and went on to study at RADA. His films included *Saturday Night*, *Sunday Morning* (1960), *Tom Jones* (1963), *Scrooge* (1970) and *The Dresser* (1984). He received five Oscar and nine Golden Globe nominations.

Friday 8 February Police investigating vandalism of headstones and chapels at Philips Park Jewish cemetery in Whitefield treated it as a hate crime.

Sunday 10 February Manchester celebrated the Chinese New Year (Year of the Pig). The highlight was the dragon parade through the city-centre streets.

Wednesday 13 February Eric Harrison, football coach, died, aged 81. A professional footballer he became a football coach, first at Everton and from 1981 at Manchester United where he was responsible for nurturing David Beckham, Ryan Giggs, Gary Neville, Paul Scholes and others into first-team players. He was awarded MBE for services to football in 2018.

Monday 18 February New social housing scheme announced for Collyhurst, part of seven new neighbourhoods along the River Irk from Angel Meadows to Harpurhey.

Friday 22 February Racist graffiti spray-painted on pavements in Levenshulme outside the Madina Mosque, Barlow Road, and on Stanhope Street. It was chalked over by volunteers.

Thursday 21 February Hundreds of women took part in 'Reclaim the Night' protest to make the city's streets safer for women. They marched from Owens Park halls of residence, Fallowfield to Manchester University Students' Union on Oxford Road.

Tuesday 26 February A serious wildfire broke out on Marsden Moor, near Diggle in Oldham on one of the warmest winter days on record.

Thursday 28 February Sarah Frankcom, artistic director of Manchester's Royal Exchange theatre appointed director of London Academy of Music and Dramatic Art (LAMDA), the oldest drama school in the UK.

Friday 1 March Craig Bieszke, club promoter, died, aged 35. He promoted nights at celebrity club Panacea on John Dalton Street.

Saturday 2 March Yousef Makki, 17, pupil at Manchester Grammar School, stabbed and killed in Hale Barns. Joshua Molnar was cleared of charges of murder and manslaughter but sentenced to 16 months in a young offenders' institution for possessing a knife and perverting course of justice.

Soup kitchen for homeless run by Lifeshare in the former Charter Street Ragged School was closed following decision by the Charter Street Mission to refurbish the Victorian building.

Monday 4 March Over 100 public and voluntary organisations signed up to support Greater Manchester Poverty Action (GMPA) which is focusing on the problem of food poverty. An estimated 200,000 children suffer food poverty in region.

Wednesday 6 March Jewish Labour Movement held meeting in Manchester to discuss whether to sever ties with the Labour Party over its handling of anti-Jewish racism.

Sunday 10 March St Patrick's Day Parade was the culmination of Manchester Irish Festival.

Monday 11 March Michael Powell, librarian, died, aged 63. Born in Farnworth in 1955, educated at Farnworth Grammar School and University of Edinburgh. He was librarian at Chetham's Library, the oldest free public reference library in the country, for over 30 years and was passionate about encouraging the study of the history of Manchester and surrounding towns.

GM Police began widespread search of Manchester city centre hunting for weapons as part of a nationwide crackdown (Operation Sceptre) on knife crime.

Wednesday 13 March Professor Dame Nancy Rothwell, President and Vice-Chancellor of University of Manchester outlined plans for the £1.5bn ID Manchester on the University of Manchester's North Campus site to property professionals at MIPIM event in Cannes. Sir Richard Leese and Joanne Roney, CEO of Manchester City Council also attended the international property event.

Thursday 14 March Graham Stringer, MP for Blackley and Broughton, did not follow Labour Party whip to abstain in parliamentary vote to hold a second Brexit referendum.

Channel 4 broadcast investigation into homelessness in Manchester, part of its *60 Days on the Streets* series.

Friday 15 March Local residents opposed plan by Alumno Developments, a London-based firm providing student accommodation, to build a 12-storey tower block on the site of the Church Inn, Hulme.

Saturday 23 March Exhibition marking the 200th anniversary of the Peterloo Massacre opened at People's History Museum.

Monday 25 March Second Green Summit held to discuss draft of Greater Manchester 5-year Environment Plan.

Tuesday 26 March Bernard Halford died, aged 77. Born in Chadderton, he was a life-long supporter of Manchester City, becoming company secretary in 1972 and life president of the club in 2010.

Thursday 28 March Ole Gunnar Solskjaer confirmed as Manchester United's manager having been caretaker manager since December 2018.

Friday 29 March Sir Richard Leese, Manchester council leader, called for some drugs to be decriminalised at meeting of Greater Manchester Authority.

Thursday 4 April Rebecca Long-Bailey (MP for Salford and Eccles) and Lisa Nandy (MP for Wigan) defeated in election for leader of Labour Party by Keir Starmer.

Friday 5 April Tyrelle Burke stabbed at house in Crossacres Road, Wythenshawe and died later in hospital. His friend Denver Walton was charged with murder.

Monday 8 April Protests over proposal to introduce a Public Space Protection Order (PSPO) in Manchester which would provide new powers to ban people from antisocial behaviour including aggressive begging and refusing to move out of doorways or stairwells.

Wednesday 10 April InLink telephone kiosks installed by BT in city centre were altered following concerns that they were being used by drug dealers.

Thursday 11 April Retailer Debenhams went into administration raising fears of job losses and closure of stores. Debenhams operates eight stores in region including its flagship store in Market Street, Manchester and anchor store at the Trafford Centre.

Friday 12 April Eight members of a Salford gang, nicknamed 'The A Team' were jailed following several shooting attempts after a gangland row dating back to 2015.

Monday 15 April Government report identified high levels of child poverty across Greater Manchester: Bolton (22 per cent), Bury (15 per cent), Manchester (28 per cent), Oldham (23 per cent), Rochdale (22 per cent), Salford (21 per cent), Tameside (19 per cent), Wigan (15 per cent). Analysis at neighbourhood level revealed wide variations in Manchester with especially high levels in Blackley and Gorton.

Tuesday 16 April Revised proposal presented by Logick for new skyscraper at Castlefield. The former cricketer Andrew Flintoff was a director of the company.

Thursday 18 April Ray Boddington died, aged 77. He was a street busker and known as lead singer of the Piccadilly Rats.

Monday 22 April Manchester's St George's Day Parade was held on the Easter Monday bank holiday.

The body of a man, found in a dock near BBC Media City, Salford Quays, revived rumours of a serial killer known as the "Manchester Pusher".

Friday 26 April Oliver Harrison, boxing coach, died, aged 59. Harrison ran Oliver's Gym in Pendleton and trained many champion boxers, including Amir Khan, world light-welterweight champion.

Thursday 2 May Local government elections held, a third of seats in the 31 wards being contested. The Labour Party was successful in defending

its seats with the exception of Didsbury West which was won by Greg Stanton for the Liberal Democrats. Labour took control of Trafford Council but lost overall control of Bolton.

Friday 3 May Alan Taylor, Liberal politician, died, aged 75. Born in Urmston in 1943. He became a prominent figure in Rochdale politics in 1980s and later as Lib-Dem council leader (2006-10).

Tuesday 7 May Linton Bryan, 34, of Oldham jailed for 18 months for threatening to kill everyone on board a Ryanair flight from Manchester to Turkey in June 2018 by opening the aircraft's door.

Friday 10 May Rev Dr. Richard Hills, historian, aged 82, died. He played an important part in helping to establish the Manchester Museum of Science and Industry; awarded MBE for services to industrial heritage in 2015.

Sunday 12 May Manchester City confirmed as Premier League champions for second consecutive season.

Thursday 16 May Pakistani-born human rights lawyer Abid Latif Chohan became Manchester's new Lord Mayor. The Longsight councillor was founder and chair of the British Pakistani Cultural Association which promotes Pakistani heritage and culture.

Saturday 18 May Great City Games held for final time in city centre with a running track in Deansgate and field events in Albert Square.

Monday 20 May Opposition to the plan to build large extension to The Christie cancer hospital, Wilmslow Road.

Thursday 23 May Elections to European Parliament. The eight winning candidates for the North West Region were David Bull, Claire Fox and Henrik Nielsen (Brexit Party, 31.2 per cent), Theresa Griffin and Julie Ward (Labour Party, 21.9 per cent), Chris Davies and Jane Brophy (Liberal Democrats Party, 17.2 per cent) and Gina Dowding (Green Party, 12.5 per cent). In Manchester the turnout was 31.7 per cent: Labour (37.2 per cent), Liberal Democrats (19.5 per cent), Green (18.5 per cent), Brexit (13.9 per cent), Conservatives (3.2 per cent), UKIP (2.4 per cent). In Salford the turnout was 30.1 per cent, the Brexit Party (29.8 per cent) receiving the largest number of votes.

Friday 24 May Hundreds of school pupils gathered in St Peter's Square protesting about climate change. Andy Burnham, mayor of Greater Manchester, attended and supported the action.

Manchester Jazz Festival in St Anne's Square. Festival highlights included performances by pianists, Keith Tippett and Matthew Bourne.

Monday 3 June Life-size bronze statue of Lily Parr who played for Dick, Kerr football team and England unveiled at the National Football Museum. It was the first statue to a female footballer in the country. The sculptor was Hannah Stewart.

Saturday 8 June In the Queen's Birthday Honours Darryl Mark Lee awarded OBE for services to charity and Jewish community in Manchester; Professor Abigail Gregory deputy pro-vice-chancellor, Manchester Metropolitan University awarded OBE for services to exports.

Parklife music festival at Heaton Park.

Friday 14 June King David High School was judged as 'inadequate' after a re-inspection by Ofsted.

Saturday 15 June Centenary of John Alcock and Arthur Brown historic transatlantic flight. It took 16 hours to fly non-stop from St Johns, Newfoundland to Clifden, County Galway. These pioneering Manchester aviators are remembered with blue plaques: Captain John Alcock (Kingswood Road, Fallowfield) and Lieutenant Arthur Whitten Brown (Oswald Road, Chorlton).

Tuesday 18 June Heavy metal group Metallica made a donation of £40,000 to Coffee4Craig, a Manchester street kitchen and food bank charity, after performing a sold-out concert at the Etihad Stadium.

Sunday 23 June Tenth annual Manchester Day celebrations attracted large crowds.

Tuesday 25 June Cyclists held rally to protest about inadequate provision of cycle lanes in plan to revamp Great Ancoats Street.

Thursday 27 June 44-storey West Tower, Deansgate Square, designed by SimpsonHough, completed.

Thursday 4 July Biennial Manchester International Festival. The programme opened with a *Bells for Peace* event at Cathedral Gardens, arranged by peace campaigner Yoko Ono.

Tuesday 9 July Manchester Council to revise design of Peterloo Memorial following criticisms that it was not accessible for disabled people.

Murder investigation launched following discovery of body of Hiran Chauhan, a chef working in the Northern Quarter, in woods off Eccles Old Road.

Thursday 11 July Kylie Minogue performed sell-out concert at Castlefield Bowl, part of Sounds of the City programme.

Friday 12 July Schoolchildren held demonstration in Cheetham Hill protesting about poverty, climate change and knife crime ('Save Lives, Not Knives').

Monday 15 July Colin Blaney, author, aged 63, died. A former football hooligan, his books included *Undesirables: The Inside Story of the Inter City Jibbers* (2014) recording his life as a member of the Wide Awake Firm, hooligans who followed Manchester United in the 1970s and 80s.

Wednesday 17 July Death of Greater Manchester Fire and Rescue Labrador dog, Echo, the most decorated fire service dog in the country.

Thursday 18 July Bluedot festival of music and science at Jodrell Bank Observatory opened. The site was also declared a Unesco World Heritage Site in recognition of its history of astronomical research and discovery.

Monday 22 July Police data indicated that during the year ending April 2019 police in the centre of Manchester received reports on average each day of one sex attack, ten violent assaults, three burglaries, 42 thefts, and four robberies and three public order offences.

Wednesday 24 July Salford-born film director Mike Leigh received Freedom of the City of Salford.

Thursday 25 July Comedian John Bishop awarded an Honorary Doctor of Arts degree by Manchester Metropolitan University. Bishop was a graduate of Manchester Polytechnic.

Friday 26 July Labour leader Jeremy Corbyn, speaking at the Irish World Heritage Centre, Cheetham Hill, warned of Boris Johnson calling a snap election.

Saturday 27 July Boris Johnson on his first visit to Manchester as

prime minister promised to improve public transport services and increase police numbers in speech delivered at the Manchester Science and Industry Museum.

Wednesday 31 July Sharp fall in share price of Intu Properties, the shopping centre company that owns the Trafford Centre following announcement of decline in rental incomes.

Thursday 1 August Heavy rains forced the evacuation of residents in Whaley Bridge because of fears that the Toddbrook Reservoir would burst and flood the town.

Friday 2 August Airbnb data on the Manchester short-term rental market indicated an increase in numbers of international and domestic visitors to the city.

Wednesday 14 August Paul Creedy from Wythenshawe escaped from HMP Kirkham, where he was serving a 10-year sentence for manslaughter and conspiracy to commit robbery. He was part of a gang who pushed a man into the Rochdale Canal and left him to die during a spate of city centre robberies in 2012.

Friday 16 August Large crowd gathered on Windmill Street to mark the 200th anniversary of the Peterloo Massacre. The official memorial, designed by Jeremy Deller, had been unveiled on the site earlier in the week.

Friday 23 August Opening of Pride Festival. Events included Candlelit Vigil, Gay Village Party, and Manchester Pride Parade and Youth Pride MCR.

Tuesday 27 August Bury FC was expelled from the English Football League because of financial problems. The club had been a member of the League since 1894.

Premiere of *Mrs Lowry & Son* at The Lowry, Salford. The film is directed by Adrian Noble.

Friday 30 August Extinction Rebellion protesters set up camp on Deansgate. The road remained closed to traffic from St Mary's Gate to John Dalton Street for four days.

Saturday 31 August Thousands of people gathered in Manchester city centre to protest against Prime Minister Boris Johnson's plan to suspend parliament. The 'Stop The Coup' protest was organised

by Momentum, the anti-Brexit campaign Another Europe is Possible and other groups.

Sunday 1 September Vic Lezal, music impresario, died, aged 73. He was well-known as leader of Vic Lezal and the Professionals, the house band at The Ritz nightclub from 1973 for 37 years.

Monday 2 September The 2019 Clean Britain Report placed Eccles in Salford and Bury in the top ten of the cleanest towns in UK. Manchester was ranked thirteenth.

Wednesday 11 September Manchester City named a road at their training complex after former captain Vincent Kompany. There are also plans to erect a statue of Kompany outside the Etihad Stadium.

Saturday 14 September The final stage of the Tour of Britain, Britain's biggest professional cycle race, took place in Greater Manchester, culminating on Deansgate in Manchester.

Monday 16 September Greater Manchester Police installed knife amnesty bins in all 10 boroughs to reduce knife crime.

Wednesday 18 September Over 15,400 people were waiting to start treatment for more than 18 weeks at the Manchester University NHS Foundation Trust (MFT), the highest number on the trust's waiting list since 2008.

Tuesday 24 September Albert Square was centre of the Manchester Food and Drink Festival.

Sunday 29 September Protest march, led by mounted police, through streets in the city centre opposing the Tory government ahead of the Conservative party conference. As in previous years GM Police erected a 'ring of steel' around the conference centre.

Tuesday 1 October Manchester City Council published its annual *State of the City* report.

Monday 7 October Manchester Museum to return sacred ceremonial artefacts to indigenous Australians, nearly a century after the items came into its possession.

Tuesday 8 October Mana restaurant run by Simon Martin in Blossom Street, Ancoats, awarded Michelin star, the first

Manchester restaurant to hold the award since The French (Midland Hotel) in the 1970s.

Thursday 10 October Hashem Abedi, younger brother of suicide bomber Salman Abedi, extradited from Libya and charged with conspiring to cause the explosion which killed 22 people at the Manchester Arena.

Friday 11 October Man attacked shoppers in Arndale Centre with knife. He was arrested and later detained under the Mental Health Act.

Saturday 12 October Diwali Mela, Indian Festival of Light, celebrated in Manchester with folk and classical dances of India and theatre performances in Albert Square.

Sunday 13 October Professor Danielle George, University of Manchester, organised concert of her Robot Orchestra at Royal Exchange Theatre.

Monday 14 October Criticisms continued over reliability and punctuality of Northern Rail services when it was announced that it intended to continue using Pacer trains on three of its Greater Manchester routes until 2020.

Thursday 17 October Ministry of Housing, Communities and Local Government's Index of Multiple Deprivation identified most deprived and most affluent districts, highlighted geographical closeness of rich and poor in Salford Quays and Ordsall; Manor Avenue, Sale and Sale West (Racecourse estate).

Friday 18 October A 35-year-old man was stabbed after a fight broke outside the Ye Golden Lion pub in Blackley.

£1.4bn plans to redevelop Mayfield area on River Medlock adjacent to Piccadilly Station includes a 6.5-acre park, the first major green space in the city for more than a century.

Wednesday 23 October Edwardian Hotels London and Radisson Hotel Group re-launched their 5* hotel in Peter Street as The Edwardian Manchester.

Thursday 24 October Manchester was ranked second in national 'Crime Severity Scores' published by the Office for National Statistics. Manchester's score dropped from 35.4 to 32.1. The average for England and Wales was 14.2. In Greater Manchester only Stockport (13.5) was below the national average. Rochdale, Salford, Oldham and Tameside all recorded a score of 19.7; Bolton was 19.0; Bury (16.4); Wigan (14.4) and Trafford (14.2).

Saturday 26 October Manchester's Heaton Park Tramway was operating again following the replacement of stolen copper wire, the money having been raised by crowdfunding.

Monday 28 October University of Manchester announced new multimillion pound research institute for health to be called The Christabel Pankhurst Institute for Health Technology.

Thursday 7 November Cyber Resilience Centre, a collaboration between Greater Manchester Police (GMP) and Manchester Digital, launched to improve cybersecurity among business in Greater Manchester

Friday 8 November Manchester Christmas Markets opened.

Saturday 9 November Manchester Culture Awards presented. Michala Hulme received the Manchester People's Culture award.

Monday 11 November Commuters continued to experience substantial delays on trains operated by Northern Rail. From October 13 to November 9, less than half of all Northern trains arrived at their destinations on time.

Wednesday 13 November Testing started on the Trafford Park extension of the Manchester Metrolink tram network. The 5.5 kilometre line from Pomona to the Trafford Centre is due to open in spring 2020.

Thursday 21 November Salford expat Peter Williamson, 39, known as Snaggle, was shot dead outside his villa on Fuengirola, Costa del Sol. Williamson was linked to Salford's gangland leaders, D'Maine Robinson and Christopher Zammit.

Thursday 28 November 'Glade of Light - A Living Memorial' chosen by families as permanent memorial to the people killed in the Manchester Arena attack. It is to be located on Fennel Street by Manchester Cathedral.

Friday 29 November Bronze statue of Mahatma Gandhi unveiled outside Manchester Cathedral, part of the Gandhi Statue Project promoted by the Shrimad Rajchandra Mission Dharampur UK. The sculptor was Indian artist Ram V Sutar. It was sponsored by the Kamani family in memory of their grandfather Bhanji Khanji Kamani. The 'Decolonise Network' at the University of Manchester had called for the statue to be reconsidered because of Gandhi's 'antiblack racism' in Africa.

Saturday 30 November Tallest building in city, the 210m high South Tower, Deansgate Square (architects SimpsonHough) completed.

Friday 6 December Glodwick in Oldham was identified as having the second highest incidence of severe poverty among old people out of 32,844 neighbourhoods in England.

Tuesday 10 December Manchester Metropolitan University announced it was to build new sports institute on Oxford Road, overlooking the Mancunian Way, having abandoned plans to locate it on the Etihad Campus.

Thursday 12 December Historic general election in which the Conservative Party led by Boris Johnson were returned to government with an increased majority. In Greater Manchester Bury North, Bury South, Heywood and Middleton, Bolton North East and Leigh returned Conservative MPs. The Labour Party retained its Manchester constituencies with large majorities: Blackley and Broughton: Graham Stringer (Labour) held seat (turnout 53.0 per cent); Manchester Central: Lucy Powell (Labour and Cooperative) held seat (turnout 57.0 per cent); Manchester Gorton: Afzal Khan (Labour) held seat (turnout 58 per cent); Manchester Withington: Jeff Smith (Labour) held seat (turnout 69.5 per cent); Wythenshawe and Sale East: Mike Kane (Labour) held seat (turnout 59.0 per cent).

Monday 16 December Playhouse Theatre, Hulme staged its first production in 20 years.

Saturday 28 December Teenage boy found stabbed in Church Street, outside Arndale Centre.

Monday 30 December Home Secretary announced additional £3.3m to Greater Manchester Police to tackle serious crime.

A Climate Report for 2020

Trends and changes in the main observable effects of climate change and greenhouse gas emissions (GHGs) for the calendar year 2020 are outlined. The global carbon budget, together with developments in UK law and climate policies are summarised. 2020 was an unusual year because of economic recession due to the COVID-19 pandemic. This report has been prepared by Brian Tyler, a member of the Science & Technology Committee, 2015–2021, who may be contacted at bjtyler@stc1990.com. It has been written for the general membership of the Society. Fuller and more detailed reports on the global climate are available at <https://www.ncdc.noaa.gov/sotc/>.

(It is hoped to include a yearly report on climate events in each future volume of the Memoirs - Ed.)

Observable climate change effects 2020

2020 was the second warmest year since 1850 (BE)* with a global mean surface temperature departure of $1.18 \pm 0.07^\circ\text{C}$ above the 1850 to 1900 average which is often used as a benchmark for the pre-industrial period. The last six years have been the warmest six years on record. About 10% of the Earth's surface set a new local record for the warmest annual average and no place on Earth experienced a record cold annual average. The highest excesses were concentrated in the northern hemisphere, where weather conditions in Russia during 2020 were particularly extreme and worthy of extra attention (BE). The average temperature in Russia was nearly 4°C above the pre-industrial average. This broke the previous record for warmest year in Russia (2007) by a staggering 1.2°C .

In September 2020 the sea level rise since 1993 was reported as $97 \pm 4\text{mm}$, including a rise of around 2mm over the past year (NASA). The main causes are added water from melting ice sheets and glaciers, together with expansion of seawater as it warms. Ocean acidity continues to increase (EPA) with pH now between 8.05 and 8.10.

The average September minimum (NASA) for Arctic sea ice coverage was 3.9 million km^2 , the second lowest recorded level since 1980 when

** The references name the organisations from whose websites the data were taken. For example, BE identifies Berkeley Earth and a Google search for their website using a search term such as global temperature 2020 leads to the relevant page – and much more.*

the average was around 7.2 million km². In contrast Antarctic sea ice at 18.7 million km² was slightly above the 1981-2010 average. This is due to long-term, large-scale wind circulation patterns that drive sea ice away from Antarctica, allowing more sea ice to form, as predicted by climate modelling. There was further loss of mass from the land ice sheets in both Antarctica and Greenland, continuing the trend recorded by the NASA GRACE satellites from 2002 onwards. Studies of glaciers have shown that whilst there are isolated cases of growing glaciers, the overwhelming trend worldwide is retreat.

There are many reports for 2020 of extreme weather events including wildfires, floods, droughts, storms, heat waves and more. It was the sixth consecutive year in which more than ten weather disasters costing over \$1 billion occurred in the USA, whereas that had happened in only four other years in the previous four decades. The 2019-20 bushfires in New South Wales were unprecedented in their extent and intensity, affecting 5.3 million hectares (6.7% of the State). Detailed analysis and comparison with model predictions shows that, for many events, their likelihood has increased because of global climate change (AMS, Explaining Extreme Events).

Greenhouse gas emissions and causes 2020

The levels of greenhouse gases (GHGs) in the atmosphere continued to rise. The Mauna Loa Observatory in Hawaii reported that the main GHG, CO₂, rose from a monthly average in January 2020 of 413.6 ppm to a 2021 monthly average of 415.5 ppm. In the past five years the annual rise has averaged 2.5 ppm/year so, despite the huge turndown in economic activity due to the COVID-19 pandemic, the change, 1.9 ppm, is only slightly below the 5-year average. In October 2020 the monthly mean methane level was 1891 ppb, an increase of 15 ppb over the year, whilst in the same period the nitrous oxide monthly mean rose from 332.1 to 333.4 ppb. The pre-industrial levels for these three GHGs were 280 ppm, 720 ppb and 275 ppb respectively. For all three gases these are the highest levels in the last 800,000 years. Their combined effect (NOAA), after allowing for the higher potency of CH₄ and N₂O, gives an effective carbon dioxide level of 500 ppm compared to its pre-industrial value of 280 ppm.

The primary driver for these changes is the continued use of fossil fuels with land use change and farming as important secondary sources. Fossil fuels are widely used in generating electricity, in transport including aviation and shipping, in heating and in steel, cement and other manufacture. In 2020 global emissions from fossil fuels (CB)

were about 34 GtCO₂, a drop of about 7% from 2019 largely due to the Covid-19 turndown. Including estimates for land use change (LUC) increases this to 40 GtCO₂. The latest UNEP Emissions Gap Report, reporting data for 2019, showed that global GHG emissions broke the record for the third consecutive year, reaching a record high of 52.4±5.2 GtCO₂e without LUC emissions and 59.1±5.9 GtCO₂e when LUC is included. The 2020 data are not yet available but in 2019 the three largest emitters were China, the USA and the EU+UK responsible for 14.0, 6.6 and 4.3 GtCO₂e respectively or 9.7, 20.0 and 8.6 tCO₂/per person. However, if import and export trade emissions are included, then the per capita figure for the EU+UK is greater than that for China.

Territorial emissions in the UK for 2020 (BEIS), covering all GHGs, were 414 MtCO₂e, down by 8.7% from 2019 because of the pandemic. Using data from previous years (OWiD) to estimate emissions linked to aviation, shipping and import/export trade, gives an estimated total of ca 550 MtCO₂e or 8.1 tCO₂e per capita. The main sources are: electricity 15%; housing 15%; transport including aviation 33%; clothing 3-4%; steel 7%; cement 7%; food – most of the rest. Primary energy generation in the UK is mostly from fossil fuels, with renewables providing 20.8%, an increase of 0.5% over the year (OWiD for 2019).

The latest available figures for global changes in land use and deforestation (for 2019) report that almost 4 million hectares of humid primary forest were lost – close to the decadal average – as part of a total tree cover loss of 24.2 million hectares. The “rainforest” loss was mostly in tropical areas with Brazil and Indonesia accounting for more than half.

During 2020 the world population rose by just over 1% to 7.8 billion. It is projected to reach 8.9 billion in 2035 and 9.7 billion by 2050.

Global remedial action 2020

The cumulative total emissions of CO₂ since the start of the industrial revolution is estimated (GCP) as 2200 GtCO₂. For a 50% chance of keeping below a 1.5°C rise, this should not exceed 2800 GtCO₂ (after allowing for non-CO₂ warming) leaving a budget of no more than 600 GtCO₂ or about 15 years at the present rate of global emissions. Removal of CO₂ by carbon capture, utilisation and storage (IEA) is just under 40 Mtpa, miniscule in comparison with current emissions.

The legally binding international treaty on climate change, known as the Paris Agreement, was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming due to human activity to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels.

A Climate Report for 2020

The UK Climate Change Act (2008) commits the government by law to reducing greenhouse gas emissions to net zero by 2050. The Act also established the Committee on Climate Change (CCC) to ensure that emissions targets are evidence-based and independently assessed. In December 2020 the CCC published the “Sixth Carbon Budget – the UK’s path to net zero”. This lengthy and detailed report provides a blueprint for the journey and the steps needed to deliver net zero and emphasises the need for Government action and leadership. However, the 2019 Progress Report shows only a minority of the milestones set out there have been met.

To achieve the goals of the Paris Agreement, each signatory country is required to set its target plan towards achieving the overall goal. These nationally determined contributions (NDCs) are reported to the UN and provide a global overview of planned reductions. They are not binding, nor enforceable. The present global average temperature rise is +1.18°C. The promised NDCs are predicted (CAT) to give a rise of 2.6°C (range 2.1 to 3.3°C) by 2100 but the actual policies will give a rise of 2.9°C (2.1 to 3.9°C). There is no prospect of keeping below or even close to a 1.5°C rise without more ambitious and fully implemented NDCs and development of a large-scale greenhouse gas removal programme.

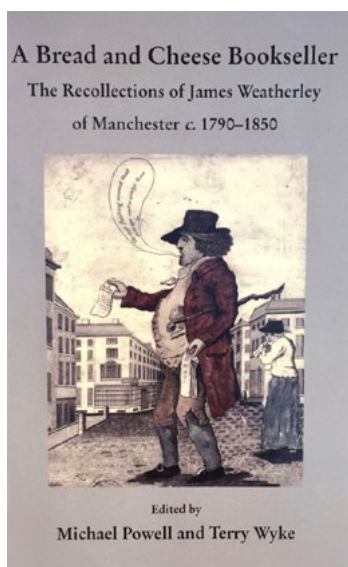
Definitions

| | |
|-----|--|
| Gt | 1 Gigatonne = 10^9 tonnes = 1 billion tonnes |
| Mt | 1 Megatonne = 10^6 tonnes = 1 million tonnes |
| ppm | parts per million or 1 in 10^6 |
| ppb | parts per billion or 1 in 10^9 |

Data sources include the websites of

| | |
|------|---|
| AMS | American Meteorological Society |
| BE | Berkeley Earth |
| BEIS | Department for Business, Energy & Industrial Strategy |
| CAT | Carbon Action Tracker |
| CB | CarbonBrief |
| EPA | US Environmental Protection Agency |
| GCP | Global Carbon Project |
| IEA | International Energy Agency |
| NASA | National Aeronautics and Space Administration |
| NOAA | US National Oceanic and Atmospheric Administration |
| OWiD | Our World in Data |
| UNEP | United Nations Environment Programme |

BOOK REVIEW



Michael Powell and Terry Wyke (eds),
*A Bread and Cheese Bookseller: the
Recollections of James Weatherley of
Manchester, c.1790-1850*
**Chetham Society, vol. 55, 2021,
£39.95.**

James Weatherley's memoir is a Mancunian delight. This vivid and remarkable account of the late Georgian and early Victorian Manchester shows a town too often characterised as an industrial hellhole to be as rich in life and colour as any great city.

Born illegitimate in Salford workhouse, losing both his parents, and set to work as a child labourer in the mills, James Weatherley might easily have been one of the countless casualties of the industrial revolution. Judging by this account of his child labour in a cotton mill, he could have held his own against Monty Python's three Yorkshiremen:

I had to be there by twenty minutes before five to get the machinery Oild against the Engine started at five o'clock, many times I have had to go all the way up to my knees in snow and sometimes as slippy as Glass, we worked until nine at night I could never get to Bed before Eleven at night only having about four hours and a half to sleep, he only give me threepence a week (p.41).

One Sunday he had had enough, skipped school, and ran all the way to Stockport, where he was overjoyed to find that it had a 'castle'. Weatherley's youth played out against the turbulent background of the French and Napoleonic wars, and his memoir features the battle of Trafalgar, the volunteers ('one as fat as Falstaff the other as fat as the living Skeleton'), the press gang, the Luddites, factory fires, hangings, the Exchange riots, the march of the Blanketeers, and Peterloo. There are character sketches of numerous Manchester figures, such as the

Book Review: A Bread and Cheese Bookseller

eccentric schoolmaster Joshua Brooks, the radical editor James Wroe, the antiquarian Thomas Barritt, the actor Samuel Ryley, and the manufacturer William Yates who once commuted from his chateau on Bury New Road into Manchester in a carriage drawn by kites.

Weatherley's memoir includes an important account of the Manchester book trade, a subject in which its editors are both experts. Their introduction sets him in context nicely, a smart operator despite his own limited literacy, intermittently successful but forever sliding back to the margins. He dealt adroitly with devious and light-fingered customers, yet he also delighted in doing others down, even as he complained bitterly of being done down himself. He also ran a useful sideline in restoring and selling musical instruments, criss-crossing Manchester with dismantled organs and acting as a chapel organist when he could get decent enough clothes to perform in.

A large part of Weatherley's trouble was his weakness for drink, as he himself was well aware. His account of his attempts at abstinence in the 1830s are a significant document for the temperance movement, not least because it lacks the evangelical tone of other testimonies: in the end, he opted consciously for the social pleasures of the pub.

If the book has a climax it is Weatherley's long account of his experiences inside Lancaster castle's debtors prison, an astonishing piece of detailed recollection. Weatherley contrived to get himself declared bankrupt in the crash of 1826, and had to argue his way into the castle. Ten weeks later he argued his way out again, debt-free and carefree, having enjoyed perhaps the most sustained happiness of his life. The Lancashire fellowship of debtors was the best – indeed, the only – club he ever joined, and his experience contrasts memorably with Charles Dickens' account of London's Marshalsea.

Michael Powell was always ready to share his transcript of this memoir with any with any interested visitor to Chetham's library, and as the custodian of Weatherley's literary remains his editorial work was clearly a labour of love. Sadly he died before it went to press, and it opens with an apt and moving tribute to him by his fellow-editor Terry Wyke.

The one thing that might be questioned is the decision to print it without supplying the spelling and punctuation, 'believing that this will distort the authenticity of this singular voice'. But what is authentic here? Weatherley's voice was filtered through the wayward pen of the unknown scribe to whom he dictated these recollections at the end of his life. Punctuation and typography at this time were a matter for the publisher and printer, and had his story been published in his own lifetime Weatherley would have expected to be professionally presented.

I understand that a high-quality illustrated edition is under consideration, using some of the wonderful illustrations in Chetham's library - many of them by Thomas Barritt, who features in the text. If so, consideration should be given to rendering Weatherley's voice as readable in print as he was fluent in speech. The manuscript is also filled out with newspaper cuttings carrying recollections of Weatherley and his world. There is even a section of a supposed diary, probably ventriloquised by Richard Wright Procter but an insightful piece of writing all the same. An illustrated volume which could take in all this would be quite something; in the meantime, the present volume will do very nicely indeed.

Robert Poole
University of Central Lancashire.
20 July 2021

*Deaths occurring in the period
July 1, 2019 to June 30, 2020*

Dr. Angus McDougall (d. 14 March 2020).
Obituary vol. 157, pp153-4)

Prof Brian Robson (d. 5 June 2020).
Lit & Phil Member 1987-2005

Named Lectures 2019–20

A complete list of the Named Lectures prior to 2019 is given in volumes 151 to 157 of the Memoirs.

2020 May 20

The Ramsden Lecture

*There are no Adults: my journey to realising that
no-one has a plan!*

Dr. Kirstie Whitaker

N.B. As a result of Covid-19 this was the Society's first ever online lecture.

*Proceedings of the Manchester Literary and
Philosophical Society*

*Annual Report of the Council 2019-20**

As in previous years the Society again enjoyed a very varied and interesting programme throughout the year. Detailed below are reports from the various sections detailing the activities during the year.

Lectures and events arranged by Council

**Dr. Jonathan Swinton – *Alan Turing’s Manchester’*
16 September 2019, 2.00 pm, Church House, Lit & Phil seminar room**

Although technically in the 2018-19 season (i.e. before the AGM), I include this event, as it was not reported upon last year. Jonathan Swinton, a Cambridge graduate, did his PhD in Applied Maths at Imperial College, London. Since then, he has combined academic life and working in industry, and is now a consultant to a variety of groups, and of course an author.

He has this year (2019) published an excellent book about the complexity of the city of Manchester which Alan Turing encountered in 1948, until his untimely death in 1954, aged 41, and the remarkable men and women who surrounded him. He detailed aspects of the city particularly relating to the evolution of Manchester as industrial, academic and vibrant city, which continues today.

**Professor Desmond Winterbone – *An Unusual Announcement: Carlo Crivelli’s ‘An Annunciation with Saint Emidius’ (1484)*
24 September 2019, 7.30 pm, following Society AGM, at RNCM**

Professor Winterbone, former Vice-Principal of UMIST and also Pro-Vice Chancellor, gave the Society a very erudite rendition of the details of Crivelli’s painting ‘An Annunciation with Saint Emidius’. Prof Winterbone’s background in Mechanical Engineering (and also a post-retirement degree in Humanities, with History of Art) gave him a special insight into his interpretation of the nuances of this fine painting, which currently resides in London’s National Gallery.

Examples of the significance of various parts of the picture (particularly at a time when the majority of the population were illiterate) included – the garden as related to a young unmarried woman; the doorway – the

*This is an edited version of a section of the complete Report and Accounts which is available from the Office.

‘doorway to heaven’; the peacock – it was thought it’s flesh did not decay, i.e. immortality; God depicted as a cloud rather than in human form; the perfect geometric patterns within many of the components within the picture (books had been written at that period on perspectives); the apple – reminding us of original sin.

Greater Manchester Police museum and Archives Tour

24 October 2019, 2.00pm

This was a fascinating tour around the Greater Manchester Police Museum – situated in a very unassuming building in the heart of Manchester’s Northern Quarter. 20 members were shown around by a very knowledgeable guide, who was a retired police officer, and answered all of our many questions. We saw how it might have been in the late 1800s and through the following century, as well as a well-restored Magistrates Courtroom.

HH Judge David A Stockdale - *‘Crime and Punishment – Why do we punish offenders?’*

24 October 2019, 7.00 pm, RNCM

David Stockdale is a Senior Circuit Judge, the Resident Judge at Manchester Crown Court, and also the Honorary Recorder of Manchester. He now sits exclusively on criminal cases and is authorised to hear cases of murder, manslaughter, and terrorism, and to sit in the Court of Appeal Criminal Division. He gave a thought-provoking talk around ‘why do judges punish offenders?’ and summarised the history of this over the centuries. He also spoke in some detail of the more recent changes in the law, and how they have affected the course of justice. Are we as a society drifting away from our moral values and concentrating too much on retribution? And where is the voice of the victim? We should continue to always keep thinking, with every case, as to why we are punishing that particular offender.

Cafe Band and Wyn Davies - *‘The Lit & Phil Christmas Concert’*

13 December 2019, 7.00pm, RNCM

The Lit & Phil rounded off the autumn term with a wonderful concert from the ‘Café Band’ – a group of musicians who got together during their time at Opera North – composed of David Greed on violin, Liz Wyly was due to play the viola (she fractured her wrist the week before) and was bravely replaced by Anne Trygstad, Andy Fairley on cello, Dan Storer on double bass, John Mellor on clarinet, Murray Grainger

Proceedings

on accordion, and Martin Pickard on piano. The music ranged from opera (*La Traviata*), through some very moving music from *Schindler's List* to Curzon's 'Le Boulevardier' and was extremely professionally delivered. Wyn Davies, an eminent conductor (and member of Lit & Phil too) introduced and compered the evening, with his well-known poise and wit! The pre-concert drinks and refreshments were also much appreciated.

Professor Trevor Robbins – *Our Mysterious Frontal Lobes and their Role in Human Mental Disorders*

18 February 2020, 7.00pm, RNCM

This was a very well-attended lecture, and delivered by Professor Trevor Robbins, Professor of Neuroscience at the University of Cambridge. He had been recently ranked as 'the fourth most influential brain scientist of the modern era'. Professor Robbins gave us a fascinating insight as to the history of the research into brain anatomy, subsequent realisation as to the importance of very distinct areas of the brain (sometimes after some very gruesome accidents, which traumatised small areas), and brought us completely up-to-date with current knowledge. He also described the advances in brain imaging, which has aided much of the work. He talked in some detail about particular disorders – OCD (obsessive-compulsive disorder); ADHD (attention-deficit/hyperactivity disorder); some personality disorders, and concluded with the thoughts on emotional versus rational thinking, the distribution of brain networks, and the chemical modulatory systems used by the brain.

Due to the Covid19 pandemic lockdown enforcements in March 2020, the Lit & Phil 'live' lectures for the rest of the season were unfortunately postponed or cancelled, the first casualty being at 24 hours' notice (the RNCM closed its doors on 15 March, with Jonathan Walton's lecture due on Monday 16 March).

Dr. Susan R Hilton M.B. Ch. B., DRCOG, MA, FPPH
President 2018-2021

**Lectures and other events organised in 2019-20 by the Arts
Committee:**

15 October 2019

No Regrets – the life and music of Edith Piaf - Derek Blyth

17 October 2019

Macbeth - Visit to see the production at the Royal Exchange Theatre

5 November 2019

Talk on George Eliot, at Church House, by Dr. Creina Mansfield

6 November 2019

Place names and the Medieval Landscape in the Manchester Area - Alan Crosby

28 November 2019

George Bernard Shaw as Music and Opera Critic - Prof Anthony Ogus

28 January 2020

Beethoven's Ninth Symphony - Michael Downes – POSTPONED
due to illness

26 February 2020

What is the City? - John McGrath

5 March 2020

Wuthering Heights – Visit to see the production at the Royal Exchange Theatre

The rest of the proposed Arts events was cancelled due to the Corona Virus Outbreak. It is hoped to re-schedule them on future dates.

They would have been:

21 April – Arts Section Committee Member Jim Howell giving a talk at Church House - “Dying Laughing, a short walk round Romanian Culture

9 June – Rafael of Urbino: Artist and Architect – Speaker, Shirley Smith

25 June – *The Glass Menagerie* – Visit to see production at the Royal Exchange Theatre

The current members of the Arts Section Committee are:

Patricia McWilliam-Fowler – Chair

Tony Jackson, Joanna Lavelle – Joint Minute Secretaries

Celia Baker, Edwina Dyson, Jim Howell, David Shreeve

Susan Hilton (ex-officio, attends as President)

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I would like to thank everyone on the Arts Team for their hard work, dedication and professionalism in organising the lecture programmes and theatre group activities, all aimed at covering a wide range of the Arts for our members to enjoy. I would also like to thank our office staff, Rachel and Aude, for their hard work and help in a particularly difficult time.

No re-elections are scheduled for this coming year. However, if any member of the Lit & Phil is interested in joining the Arts Committee at some future date, enquiries to the Chair, via the Office, and preferably by e-mail, are very welcome.

Ideas and suggestions for future talks/events are also very welcome, and should be submitted to the Chair or Minute Secretaries of the Committee, via the Office, by e-mail if possible.

Patricia McWilliam-Fowler
Chairman - Arts Committee

Lectures arranged by the Science and Technology Committee

This summary is being presented before the end of the 2019-20 session, and hence it cannot give reports on some of the lectures. In fact, the programme has shown the effects of the Covid-19 pandemic, which hit the UK at the beginning of February 2020 and will definitely restrict the programme.

This session has been an active one for the committee: we have implemented the 2019-20 programme that was developed last year, and we have planned the programme for 2020-21. In addition to these basic activities we have 'established' afternoon seminars in the Small Conference Room of the Lit & Phil in Church House, and on 10th October 2019 John Harris gave a talk entitled 'From Windscale to Hinckley Point C'.

The 2019-20 Programme ran very effectively until the impact of Covid-19 around February 2020. This meant that five lectures were presented, and the final one (scheduled for 20th April 2020) has had to be postponed/cancelled. The committee recognised that it was unlikely 'live' lectures would be recommenced in the foreseeable future, possibly not before an effective therapeutic response, or a vaccine, was discovered. It seems likely that this date will be in 2021. Having come to terms with this, the Committee investigated alternative methods for delivering lectures and decided, in conjunction with the Administration, to use the Bluejeans events app. We hope that the first presentation using this format will be soon, at the latest by mid-September.

The lectures presented this year were:

10th October 2019

The Beautiful Cure - Professor David Daniels

30th October 2019

Coral Reefs and the Future of the World - Professor Callum Roberts

3rd December 2019

Is there really a Suicide Crisis in Young People? - Professor Louis Appleby

23rd January 2020

Formula for Thrill - Professor Brendan Walker

3rd March 2020

Fusion Energy – Promises, Progress and Prospects - Kieran Gibson

20th April 2020

The Tiny Spacecraft Revolution - Professor Craig Underwood, has been postponed, but will be rearranged within a future programme

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An additional lecture, to the original programme, will be presented on-line, as noted above.

Committee for 2020-21

Chris Baker (from 2012)
Dianne Bamber (Chair) (May 2018)
Minaxi Desai (May 2017)
Susan Hilton (President - ex-Officio)
Melissa Lord (co-opted)
Paul Miller (February 2017)
Jim Thomas (May 2019)
Peter Williams (Secretary) (February 2019)
Desmond Winterbone (past - Chair) (October 2016)
Barbara Adams (retired January 2020)
Vacancy (replacing Mike Sinnott - Life Sciences)

Corresponding members

Michael Sinnott
Brian Tyler

Finally, I must thank all members of the committee for their help in bringing together the programmes and then ensuring that they are executed efficiently. I must make special mention of Peter Williams who took over as Secretary: he has had a baptism of fire while the Section adapted to on-line activities. I like to feel that the committee has operated as a team with me acting *primus inter pares*. I will stand down this year and hand over the baton to Dianne Bamber: I am sure the committee will be in good hands.

Desmond Winterbone, FREng
Chairman - Science and Technology Committee

Lectures arranged by the Social Philosophy Committee

In early October of 2019 Ian Palmer (of Greater Manchester Transport) spoke on *Delivering the Future - Greater Manchester's Transport Strategy*; then in early November we heard from Professor John Guillebaud about *The Eco-Time Capsule Project: Population Matters*; while *Psychological Well-being at Work: Why it Matters and How to Improve it* was Professor Ivan Robertson's subject in late November.

In February of 2020 Dr. Christopher Donaldson addressed the Society on *John Ruskin and the Poetry of Architecture*. In what turned out to be the final lecture arranged by the committee, Peter Barnes's topic in early March was *Bridge Over Windermere - a History of the Windermere Ferry*.

Sadly, the presentation by James Cordiner (for twenty years the Chief Engineer of the Manchester Ship Canal Company) on *Engineering the Ship Canal - Past, Present and Future*, intended for late March was cancelled due to the Coronavirus outbreak. We hope this will merely be a postponement.

Thanks, for much illuminating discussion and ideas for topics, go to the committee of Philip Hulme (Secretary), Ian Bradford, Ian Cameron, His Honour Brendan Hegarty, Susan Hilton (ex-officio, attending as President), Kenneth Letherman and Marcia McCauley. Sheila Whitaker will join us when we next convene and we hope that other members of the Society may choose to add to our numbers - please get in touch. Committee meetings are held in the evenings so that those with busy daily lives can more easily attend.

N. P. Barnes
Chairman - Social Philosophy Committee

Lectures arranged by the Young Peoples' Committee

First, I must pay tribute to my predecessor as Chairman, Dr. Angus McDougall who sadly passed away on 14 March 2020 following his long and brave battle with illness. A genuine gentleman, naturally courteous and helpful, he had chaired our committee since 2016.

We planned our normal three lectures for the year 2019-2020 but were only able to deliver two due to the impact of the Covid-19 pandemic. Our first was held on November 13th by Trevor Cox, Professor of Biochemistry at the University of Sheffield, with the title *Now You're Talking*, in which he explored the human voice, which he identified as the most exquisite acoustic source and integral to our personal identity, through a combination of intonation, pitch and accent to augment the words we use. He mixed scientific analysis with musical interludes, through which he explored the workings of the voice and how it adapts to different styles.

Our second lecture was delivered on February 4th by Nigel Linge, Professor of Telecommunications at the University of Salford, entitled *The Internet of Things*, and inviting the audience to imagine a world where everything is connected to everything else through the Internet. He described how more and more smart technologies have already found their way into our homes, cars are becoming connected, manufacturing is being transformed and cities are gathering huge amounts of data and processing it using artificial intelligence. The future will witness our homes increasingly sensing, understanding and adapting to our every need, shopping being fully automated with goods being delivered by drones, transport systems will ensure we get to where we need to be, on time, and in a way that minimises pollution and congestion and all information is constantly available wherever we happen to be. He stimulated our imagination, and succeeded in enthusing our vision of the future.

Our final lecture was due to be delivered on March 30th by Kirstie Whitaker of the Cambridge Neuroscience Community within the Department of Psychiatry, but had to be aborted due to Coronavirus pandemic lockdown. The current plan is that it will be resurrected as the Society's first online lecture to take place on May 20th, entitled *There are no adults: My journey to realising no one has a Plan!*

The Current Young People's Committee Members are:

Chairman: Peter Whitaker

Secretary: Niall Power

George Baker

Susan Hilton – President – ex-Officio

Diana Leitch (tbc)

Melissa Lord

Mary Mallick

It is intended to recruit an additional two members during the year, and we would invite any members, particularly, but not exclusively, those with active involvement with young people and their education.

I would like to thank the committee members for their time and expertise in furthering the aims of our section. A key aim for the next year is systematically to develop our marketing to attract a larger number of lecture attendees and widen the contact level particularly with 6th form colleges throughout the Greater Manchester region

Peter Whitaker

Chairman – Young People Committee

Treasurer's Report

The statutory accounts presented overleaf comply with the Charity SORP (FRS 102). To aid members' understanding of these accounts, I have included a detailed Income and Expenditure statement for the year ended 30 June 2020.

As already referred to in the President's Report, 2019-20 has been an interesting and challenging year for the Society as a consequence of the Covid-19 pandemic. Operationally, we have not been able to hold any "face to face" events or lectures since mid-March and have adapted the way we engage with, and deliver a programme to, our members. However the cessation of our lecture programme has not had a significant impact on our financial performance. Indeed, overall our financial performance has improved from last year primarily, due to a reduction in Function Costs resulting from the cessation of our programme.

Although the Society is a Charity, we have not suffered in the same way as many other charities, which have seen significant falls in income from donations and collections. Our income comes substantially from our member subscriptions and income deriving from our investment portfolio with additional contributions from members and guests via donations.

Combined, our subscriptions and investment income are at a level similar to 2019. Individually, subscription income rose due to an increase in annual subscriptions of 3% and a small increase in paying members while investment income fell slightly, primarily in the final quarter of the year due to the early impact of the Covid-19 pandemic.

Linked to this last point, the value of our investment portfolio fell year on year by over 6% as a direct result of the impact on world stock markets of the Covid-19 pandemic. However, the position at the year-end did show a significant improvement on the value of the portfolio immediately after the pandemic impacted on world markets when, at 31 March 2020, the value of the portfolio was over 16% lower than the value at 30 June 2019. We must hope that this improvement in values from March 2020 continues in 2020/21.

So, in summary, whilst 2020 was a challenging year operationally for the Society, financial performance was very satisfactory. Looking ahead, we will continue to exercise strong budgetary control on expenses while doing all we can to attract new members through our programme of events, however it is delivered.

Trevor Rees
Honorary Treasurer

The Manchester Literary & Philosophical Society
Income and expenditure account for the year ended 30 June 2020

| | 2020 | 2019 |
|---------------------------------------|-------------------------|----------------------|
| INCOME | | |
| Subscriptions and Gift Aid | 32,708 | 30,427 |
| Investment income | 39,488 | 41,560 |
| Donations and legacies | 2,909 | 313 |
| Sundry Income and Donations | 277 | 165 |
| TOTAL INCOMING RESOURCES | <u>75,382</u> | <u>72,465</u> |
| EXPENDITURE | | |
| Function costs | | |
| Functions and meeting costs | 12,130 | 16,624 |
| Printing of Memoirs | 1,363 | 2,093 |
| Programmes/ Promotional Expenses | 3,245 | 3,682 |
| | <u>16,738</u> | <u>22,399</u> |
| Office costs | | |
| Rent and services charges | 15,985 | 14,536 |
| Heat and light | 217 | 260 |
| Website | 2,409 | 2,507 |
| Maintenance /office improvements | - | 1,319 |
| Staff costs | 37,292 | 32,729 |
| Library | 133 | - |
| Stationery and photocopying | 1,400 | 1,493 |
| Postage, telephone and equipment hire | 1,464 | 1,589 |
| Insurance | 1,975 | 1,875 |
| Sundries | 487 | 1,062 |
| | <u>61,362</u> | <u>57,370</u> |
| Society costs | | |
| Legal and professional fees | 31 | 964 |
| Independent examination fee | 2,500 | 2,400 |
| Investment management fee | 9,643 | 9,915 |
| Bank charges / PayPal | 887 | 895 |
| | <u>13,061</u> | <u>14,174</u> |
| TOTAL COSTS | <u>91,161</u> | <u>93,943</u> |
| Net operating (deficit)/surplus | (15,779) | (21,478) |
| Net investment (losses)/gains | (84,332) | 33,921 |
| Net Movement in funds | <u>(100,111)</u> | <u>12,443</u> |

Proceedings

The Manchester Literary & Philosophical Society
Balance Sheet for the year ended 30 June 2020

| | 2020 £ | 2019 £ |
|-------------------------------------|------------------|------------------|
| <i>Fixed Assets</i> | | |
| Tangible assets | - | - |
| Investments | 1,360,697 | 1,481,716 |
| Investment in Subsidiary | 100 | 100 |
| | <u>1,360,797</u> | <u>1,481,816</u> |
| <i>Current Assets</i> | | |
| Debtors | 1,130 | 1,116 |
| Cash at bank and in hand | 59,764 | 36,683 |
| | <u>60,894</u> | <u>37,799</u> |
| <i>Creditors:</i> | | |
| Amounts falling due within one year | <u>(10,494)</u> | <u>(8,307)</u> |
| | <u>50,400</u> | <u>29,492</u> |
| <i>Net Current Assets</i> | <u>1,411,197</u> | <u>1,511,308</u> |
| <i>Total Net Assets</i> | <u>1,411,197</u> | <u>1,511,308</u> |
| <i>Funds of the Charity</i> | | |
| Unrestricted funds | | |
| Expendable endowment fund | <u>1,411,197</u> | <u>1,511,308</u> |
| <i>Total Funds</i> | <u>1,411,197</u> | <u>1,511,308</u> |

These financial statements were approved and authorised for issue by the Trustees at a Council meeting held on 10 August 2020 and signed on its behalf by:

P HILTON Secretary

T REES Treasurer

Company Registration Number 933
Registered Charity Number 235313

Honorary Librarian's Report

With the lockdowns, visits to the office ceased and, consequently, all work on the archives. Everything is now in store after the change of premises from Church House, so the archives continue to be out of use. I did, however, bring home a duplicate set of Memoirs and Proceedings, so that online queries can still be answered.

Christine Chappelle

Proceedings
Council and Officers and Section Officers

President

Susan Hilton

Vice-Presidents

Chris Baker Tony Jackson

Honorary Secretary

Peter Hilton

Honorary Treasurers

Trevor Rees Greg Mauchline

Honorary Librarian

Christine Chappelle

Honorary Memoirs Editor

Graham Booth

Members of Council

Chris Boyes, Ronald Catlow, Joanna Lavelle,
Kenneth Letherman, Diane Bamber,
Patricia McWilliam-Fowler, Desmond Winterbone,
Peter Barnes, Peter Whitaker

SECTION OFFICERS

Arts

Chair: Patricia McWilliam-Fowler
Minutes Secretaries: Tony Jackson, Joanna Lavelle

Science & Technology

Chair: Desmond Winterbone
Secretary: Peter Williams

Social Philosophy

Chair: Peter Barnes
Secretary: Philip Hulme

Young People's

Chair: Peter Whitaker
Secretary: Niall Power

Administrators

Aude Nguyen Duc Rachel Croft

*Presidents of the Society***Date of Election**

| | |
|-----------|---------------------------------------|
| 1781 | Peter Mainwaring, MD; James Massey |
| 1782-1786 | James Massey, Thomas Percival, MD FRS |
| 1787-1789 | James Massey |
| 1789-1804 | Thomas Percival, MD, FRS |
| 1805-1806 | Rev George Waler, FRS |
| 1807-1809 | Thomas Henry, FRS |
| 1809 | *John Hull, MD, FRS |
| 1809-1816 | Thomas Henry, FRS |
| 1816-1844 | John Dalton, DCL, FRS |
| 1844-1847 | Edward Holme, MD, FLS |
| 1848-1850 | Eaton Hodgkinson, FRS, FGS |
| 1851-1854 | John Moore, FLS |
| 1855-1859 | Sir William Fairbairn, Bart, LLD, FRS |
| 1860-1861 | James Prescott Joule, DCL, FRS |
| 1870-1871 | Edward William Binney, FRS, FGS |
| 1872-1873 | James Prescott Joule, DCL, FRS |
| 1874-1875 | Edward Schunck, PhD, FRS |
| 1876-1877 | Edward William Binney, FRS, FGS |
| 1882-1883 | Sir Henry Enfield Roscoe, DCL, FRS |
| 1884-1885 | William Crawford Williamson, LLD, FRS |
| 1886 | Robert Dukinfield Darbishire, BA, FGS |
| 1887 | Balfour Stewart, LLD, FRS |
| 1888-1889 | Osbourne Reynolds, LLD, FRS |
| 1890-1891 | Edward Schunck, PhD, FRS |
| 1892-1893 | Arthur Schuster, PhD, FRS |
| 1894-1896 | Henry Wilde, DCL, FRS |
| 1896 | Edward Schunck, PhD, FRS |
| 1897-1899 | James Cosmo Melvill, MA, FLS |
| 1899-1901 | Horace Lamb, MA, FRS |
| 1901-1903 | Charles Bailey, MSc, FLS |
| 1903-1905 | W. Boyd Dawkins, MA, DSc, FRS |
| 1905-1907 | Sir William H. Bailey, MIMechE |
| 1907-1909 | Harold Bailey Dixon, MA, FRS |
| 1909-1911 | Francis Jones, MSc, FRS |
| 1911-1913 | F.E. Weiss, DSc, FRS |

Proceedings

- 1913-1915 Francis Nicholson, FZS
1915-1917 Sydney J. Hickson, DSc, FRS
1917-1919 William Thomson, FRSE, FCS, FIC
1919 G. Elliot Smith, MD, FRS
1919-1921 Sir Henry A. Miers, DSc, FRS
1921-1923 T.A. Coward, MSc, FZS, FES
1923-1925 H.B. Dixon, CBE, PhD, FRS, FCS
1925 †Rev A.L. Cortie, SJ, DSc, FRAS, FInstP
1925-1927 H. Levinstein, DSc, MSc, FIC
1927-1929 W.L. Bragg, OBE, MA, FRS
1929-1931 C.E. Stromeyer, OBE, MInstCE
1931-1933 B. Mouat Jones, DSO, MA
1933-1935 John Allan, FCS
1935-1937 R.W. James, MA, BSc
1937-1939 R.H. Clayton, MSc
1939-1940 D.R. Hartree, PhD, MSc, FRS
1940-1944 H.J. Fleure, DSc, FRS
1944-1946 M. Polanyi, PhD, DSc, MD, FRS
1946-1948 T.B.L. Webster, MA
1948-1950 E.J.F. James, DPhil
1950-1952 H. Hayhurst, FRIC, AMIChemE, FRES
1952-1954 Sir Geoffrey Jefferson, CBE, LLD, FRCS, FRS
1954-1956 P.F.R. Venables, PhD, FRIC
1956-1958 F.C. Toy, CBE, DSc, FInstP
1958-1960 C.E. Young, MSc
1960-1962 H. Lipson, DSc, FInstP, FRS
1936-1964 L.Cohen, BCom, FBIM
1964-1966 Margaret Pilkington, OBE, MA, FMA, JP
1966-1967 H. Hayhurst, MSc, CEng, FRIC, AMIChemE, FRES
1967-1969 Brian Rodgers, BSc(Econ)
1969-1971 G.N Burkhardt, PhD, FRIC
1971-1973 G.J. Kynch, PhD, MScTech, ARCS, DIC, FIMA
1973-1975 E.N. Abrahart, PhD, FRIC, FSDC
1975-1977 A.E.R. Goulty, MA
1977-1979 H. Lipson, CBE, DSc, FInstP, FRS
1979-1981 H.M. Fairhurst, MA, FRIBA
1981-1983 D.G. Wilson, OBE, DL, FIB, FBIM
1983-1985 L.J. Postle, PhD, FInstP, FInstMC

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| | |
|-----------|---|
| 1985-1987 | Sir Netar Mallick, MB, ChB, FRCP |
| 1987-1989 | B.S.H. Rarity, PhD, FRAS |
| 1989-1991 | P.G.Livesey, FCA |
| 1991-1993 | D.S.L. Cardwell, PhD |
| 1993-1995 | E.F. Cass, MA, ACIB |
| 1995-1997 | A. Donnachie, PhD, CPhys, FInstP |
| 1997-1999 | Dianne Wilson |
| 1999-2001 | I.E. Gillespie, MD, MSc, FRCS |
| 2001-2002 | A.G.D. Yeaman, JP, CEng, MIMechE |
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| 2005-2007 | Vivienne Blackburn, BSc |
| 2007-2009 | Mary, Lady Mallick, JP, BA |
| 2009-2011 | David J Higginson, LLB |
| 2011-2014 | Kenneth M Letherman, BSc, MSc, PhD, DSc, CEng, FIEE |
| 2014-2016 | Sir Netar P Mallick, BSc, MB, ChB, FRCP |
| 2016-2018 | Diana M. Leitch BSc, PhD, FRSC, MBE |
| 2018- | Dr. Susan R Hilton M.B. Ch. B., DRCOG, MA, FPPH |

* Elected 28 April, resigned office 5 May 1809

† Died 16 May 1925

Honorary Members

As at 30 June 2020

1990 Professor Sir J M Ashworth
2017 Mrs A Boulton
2017 Mrs H Bradshaw
1989 Mr M N G Evans
1968 Reverend Dr. R L Hills
2013 Professor L Merrick
1999 Professor Sir G Prance
1990 Sir M Richmond
2013 Professor Dame N Rothwell FRS
1994 Sir R Scott
2004 Dame J Smith
2015 Dr. T Sommer
2017 Mr P Wilson

Elected and Corresponding Members

As at 30 June 2020

1972 Professor A Thackray
1946 Mrs R Williams

The Dalton Medal

The Dalton Medal is the Society's highest award and a distinction only rarely bestowed. It is given to those who have made a distinguished contribution to science.

The Medal has been awarded to:

- 1898 Edward Schunk, FRS
- 1900 Sir Henry E Roscoe FRS
- 1903 Professor Osborne Reynolds FRS
- 1919 Professor Sir Ernest Rutherford, OM, FRS
- 1931 Sir Joseph J Thomson, OM, FRS
- 1942 Sir Lawrence Bragg, CH, MC, FRS
- 1948 Professor P M S Blackett, OM, FRS
- 1966 Professor Sir Cyril Hinshelwood, OM, FRS
- 1981 Professor Dorothy Hodgkin, OM, FRS
- 1997 Professor Sir Harold Kroto, FRS
- 2002 Sir Walter Bodmer, MA, PhD, FRCPath, FRS
- 2005 Professor Sir Roger Penrose, OM, FRS
- 2009 Professor Sir Bernard Lovell, OBE, FRS
- 2012 Professor Lord Martin Rees, OM, Kt, FRS
- 2016 Professor Sir Konstantin Novoselov, FRS, FRSC, FInstP

*Ordinary and Corresponding Members
as at 30 June 2020*

* Denotes corresponding members

We are not including Members' addresses due to the requirements of the Data Protection Act.

2014 Mr J W and Mrs B Adams
2020 Mr G Adshead
2020 Mica Ahir
2019 Abdulhameed Aldurayheem
1989 Professor S T S Al-Hassani
2020 Fatimah Alsalih
2018 Dr. K Amano
2000 Mrs J and Mr J Argust
2009 Mr David Astbury
2020 Inamul Azad
2008 Mr C and Mrs J Baker
2008 Mrs C and Mr G Baker
2011 Dr. R and Mrs C Baldwin
2017 Dr. D Bamber
2020 Susan Banks
2018 Mr R Bardsley
2002 Mr P Barnes
2020 Miranda Bate
2020 Mark Beards
2020 Maisha Begum
2018 Dr. A Berry
1986 Mr Paul Berry
2019 Manju Bhavnani, OBE
2008 Professor G and Mrs M Booth
2020 Vienna Borowska
2020 Peter Bostock*
1999 Mr C Boyes
2008 Mr I Bradford
2003 Mr D Brailsford
2009 Mr J Brandrick

- 2020 Sean Brophy
- 2011 Mr M Brown
- 2018 Mrs I Burger
- 2009 Dr. C Burke
- 1985 Dame Sandra Burslem
- 2017 Miss V Byrne
- 2020 Nathan Cain
- 2010 Mr I and Mrs S Cameron
- 2020 Jim Campbell
- 2009 Mr N Campbell
- 1981 Mr J Carroll
- 2019 Laura and Peter Carstensen
- 2012 Dr. M Carter
- 2015 Mrs H Carter
- 1981 Dr. R Catlow
- 2012 Mr J Cave
- 2017 Ms A Chaouch
- 2020 Lewis Chapman-Barker
- 2020 Claire Charlesworth
- 2011 Mr R Chiverton
- 2019 Dr. P Coley
- 2020 Ryan Conlon
- 2020 Elise Cook
- 2010 Mr B Crebbin
- 2013 Dr. M and Mrs J Cunningham
- 2018 Dr. D Daji and Ms N Jaeger
- 2010 Dr. W Darlington
- 2012 Mrs J and Mr W Davies
- 2009 Professor J Davies
- 2016 Dr. S Davies
- 2019 John Davnall
- 2017 Dr. T Daya-Winterbottom*
- 2019 Michael Dearden
- 2004 Dr. A Deiraniya
- 2018 Mr B Derby
- 2013 Professor M Desai
- 2019 Paul Diggett
- 1986 Professor S and Mrs D Donnachie

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2019 Miss D Drehmer
2013 Mrs E Dyson
1978 Mr J Eagle
2020 Anne Earley
1984 Mr A Elliot
1994 Professor M and Mrs C Elstein
2013 Dr. N Emekwuru
1988 Mr P Emerson Jones
2020 Corey Estensen
1989 Mrs J Evans
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1983 Professor P Farrell*
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2012 Dr. P Fenn
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2004 Mrs A Fitzpatrick
2020 Eva Fitzsimons
2015 Professor J Frame
1990 Mr Roy Frost
2019 Adam Fullwood
2017 Dr. P Fyans
2011 Professor C Galasko
2013 Mr D Gane
2020 Sarah George
2018 Mr J Glenn
2011 Mr I and Mrs A Grant
2007 Professor J Green
2020 Mary Griffiths James
2020 Theo Hafferty
1994 Mr S and Mrs M Halsall
2010 Mr M Hancocks
2020 Alan Hartley-Smith
2019 Dr. F Hashmi
2016 Dr. J Hassall
2020 Mr R Haynes
2009 Judge Brendan and Mrs Irene Hegarty
1989 Professor J Helliwell

- 2018 Miss K Heung
 2009 Miss G Heyworth
 2020 Nicola Higgins
 2020 Geoffrey Higgins
 1989 Mr D J Higginson
 2011 Mrs E and Mr R Hill
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 2020 Sarah-Jane Hodgson
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 2014 Mr J Horner
 2009 Mr J Howell
 2015 Mrs J Howells
 2006 Mr P Hulme
 2016 Mrs H Húlová-Sharpe
 2019 A Sara Hunt
 2012 Mr M Hunt
 2020 Tom Jackson
 2001 Mr J S and Mrs M Jackson
 2009 Professor D and Mrs L A Jackson
 2010 Professor A Jackson
 2013 Mr T Jackson-Baker
 2020 Muthia Janwar
 1991 Professor M Jayson
 2010 Mr D Jenkins
 2019 Mark Jenkinson
 2017 Professor N Jones
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 2020 Anya Kingston
 2020 Zariel Konadu
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 2020 Marysia Kurbiel
 2010 Mrs J Lavelle
 2007 Mr M Lees
 1988 Mr W R Lees-Jones

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2020 David Little
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1962 Miss S Lowe
2019 Kate Macdonald
2020 Alison Mackenzie
1990 Mr N MacPhail
2020 Mark Maguire
1981 Mr C and Mrs H Makepeace
1999 Dr. P Makin
2010 Mr C Malkin and Ms C Brice
1975 Professor Sir Netar and Mary, Lady Mallick
2009 Dr. M and Miss J Martin
2016 Mr D Martin
2020 Olivia Mason
2020 Nick Matthews
2013 Mr G Mauchline
2017 Mr R G Maund
2019 Rosemary McCann
1983 Mrs M McCauley
2018 Dr. M McDowall
2020 Erica McInnis
2017 Dr. A McNab
2013 Mrs P McWilliam-Fowler
2019 Mrs S Miguel
2020 Teodora Milanovic
1988 Dr. J P Miller
2004 Mrs G Mitchell
2012 Mr D Morris
2016 Mrs H and Mr A Morris
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2017 Mr B Murphy

2001 Mr J Naylor
 2009 Mr J and Mrs Y Neild
 1997 Dr. P and Mrs K Newton
 2020 Faye O'Brien
 2019 Dr. J Olusola Adeleye*
 2007 Mr J O'Neill
 2019 Mr A O'Neill
 2016 Mr G Palmer
 2013 Mr D Peat
 2019 Laura Perrin
 2019 Mr T Phelan
 2018 Mr A Pickwick
 2001 Mrs B Piper
 1981 Dr. J Ponsonby
 2014 Mr R Poole
 2001 Mr R Poole
 1986 Dr. T and Mrs M Porter
 2013 Mr A Postill
 1985 Reverend Dr. W Povey
 2008 Mr D and Mrs J Poyner
 2011 Mr S Procter and Miss C Rigg
 1982 Mr F Purslow
 2019 Alison Qualtrough
 2019 Mr S Rapley
 2020 Zurqa Rasul
 1981 Mr R Rees
 2016 Mr T Rees
 2019 Richard Remelie
 2002 Professor B Richards
 2004 Mr W Richardson
 2017 Mr A B Riley
 2014 Mr J A Riley
 1981 Professor T Roberts
 1966 Professor A C and Mrs B Rose-Innes
 2020 Benjamin Alexander Ross
 1983 Mr R Ross
 2020 Mrs M Ross
 1992 Dr. P Rowlands

Proceedings

2004 Mr P Rubery
2020 John Russell-Hodge*
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1971 Mr M Sargent
2008 Dr. C Saunders
2020 R Schofield
2019 Silvana Serra
2018 Mr V Sheedy*
2015 Professor P Shenton
2011 Dr. D Shreeve
2010 Professor M Sinnott
2020 Ronald Smith
2013 Dr. Ambrose Smith
1989 Mr J Spencer
2020 Robert Stansfield-Cudworth
2016 Mr P and Mrs S Steele
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2019 Mr D Stockdale
2016 Dr. R W and Mrs P Stoddart
2020 Jeffrey Sturchio*
2020 Mike Sugimoto
2001 Mr N Sutton
2018 Mrs M Taylor
2000 Ms W Taylor
2012 Mrs C Taylor Bruce
2000 Mrs N Tennant
2017 Professor J Thomas
2020 Neil Thomason
2009 Professor D and Dr. H Thompson
1981 Dr. J S and Mrs H Thompson
2017 Ms M Thompson
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2011 Dr. J Tipping
2016 Dr. J Tomlinson
2016 Mr A Treece
2020 Samuel Turner
2010 Mrs H M Turner

- 2010 Dr. B Tyler
 2019 Joseph Vale
 2020 Paul Valley and Christine Morgan
 2020 Helen Veitch
 2004 Mrs P Verdin
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 2005 Mrs J Wainwright
 2020 Jill Walters
 2009 Professor T Warnes
 2008 Professor J C and Ruth Waterton
 2018 Dr. S Wattam
 2014 Mr N Webb
 1964 Professor G Wedell
 2014 Dr. C Weinkove
 2017 Mr I Whelan
 1999 Mr P and Mrs S Whitaker
 2015 Mr T Whitehead
 2015 Mr C Whittall
 2020 Phil Williams
 2012 Dr. P Williams
 2018 Mr M Williams
 2008 Mrs E and Mr B Williams
 2017 Dr. W and Mrs E Wilson
 2008 Mr P Wilson
 2008 Mrs B Wingard
 2013 Professor D Winterbone
 2019 Leszek Wolowczyk
 1994 Mr A Wood*
 2020 Alex Woodward
 2020 Jeremy Worrell
 2019 Jennifer Wynne
 2009 Mr B Yates
 1981 Mr A Yeaman
 2013 Mr R and Mrs B Young
 2010 Mr L Zastawny

Erratum

In the Contents list of volume 157 we wrongly attributed a doctorate to Anthony Ogus, the author of the article on George Bernard Shaw as music critic. Anthony is in fact an Emeritus Professor of the Universities of Manchester and Rotterdam as indicated in the pen picture at the end of his article.

Author Guide

The *Manchester Memoirs* is distributed to a number of libraries across the UK and abroad including the British Library as well as to members of the Society. An interactive electronic version is also published on the Society's website.

If you wish to contribute an article, please send a copy of your text by email to the Editor at grahamb144@gmail.com

In brief, an article should be in single column, single-spaced format and of a length between 1,000 and 5,000 words (including figures).

Please note that it is your responsibility to ensure that any figures pose no copyright issue. It would be helpful if each figure or image was forwarded in a separate file and its position in the text indicated. Ideally, the figure files should be in .jpeg or .pdf format. If you are unable to provide figures in either format please send the originals to:

The Editor, Manchester Memoirs
Manchester Lit & Phil Society

COLONY Jactin House, 24 Hood Street, Ancoats, Manchester M4
6WX

Bibliographies, Further Reading lists or References should be placed at the end of the text and indicated in the text by a Roman numeral superscript as follows:

.....as described by Blair et al³⁵. Other workers.....

In a Bibliography this would then appear as:

35. Blair, A., Brown, G. and Bull, P.St.J., *J.Pol. Rev.* 144 (1985) 45-9

If the reference is to a book this would appear as:

35. Blair, A., Brown, G. and Bull, P.St.J., *How to succeed in Government*, (Macmillan & Co. Ltd., London, 1989) pp45-9

Please check that the author's initials are the correct ones and note that although *et al.* can be used in the text, it should not be used in the list of references i.e. all authors should be named.

Please also number the pages at the bottom right. Normally a short biography of yourself and any co-authors will appear at the end of the published article - please feel free to provide this to include any background information you feel would be of interest to the reader. An email address for correspondence may also appear if you would appreciate correspondence from readers.

Book reviews, reminiscences or appreciations of prominent current or past members should conform to the same style and be up to 800 words in length

All articles will be refereed and a copy of the report(s) sent to the author.



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