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BOUNDARIES, BORDERS & BOATS



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Editorial Board

Kevin Busch

Simukai Chigudu

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Tara Nicola

Bradley Blankemeyer

Rupert Yorke

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Introduction: Transcending Boundaries

When the editorial process on this issue of the St Anne's Academic Review began, many certainly perceived the relevance of boundaries, borders and boats. The migration of tens of thousands of refugees and asylum-seekers from Syria, Iraq, and Afghanistan, not to mention the continued voyages across the Mediterranean from North Africa, brought to the political forefront the issues of whose borders bore safety in crossing, which restricted movement of people, and the means by which migrants reached these liminal junctures. Current political debate finds Great Britain at the periphery of the continent, awaiting the decision to drift away or remain anchored to its closest neighbour.

Meanwhile within Oxford graduate students focus on revisions and exams, all while sharing a common space that transcends boundaries. International students come together within the borders of colleges and libraries, yet these neither define them nor limit their capabilities for original research and scholarship. As this volume exhibits, students across disciplines observe that boundaries exist (or do not) and recognize the mechanisms through which humankind strives to transcend them (or already has). Whether these appear as limits of scientific enquiry or ambiguous distinctions between people or ideas, boundaries do not result in definitive conclusions upon discovery, but rather serve as the points where enquiring minds question their very existence.

Whatever the anxieties of Britain post-referendum, the truth remains that universities like Oxford serve as an arena of ideas and cultures, personalities and nationalities, regardless of issues faced in crossing the threshold into these higher institutions (as Edward Hicks investigates). This transcendence of boundaries has created a rich environment of cultural and intellectual exchange that helps break down our own physically-enforced limits to understanding and knowledge, and it is the hope that these kinds of movements may continue to form a significant part of our academic endeavours.

Thanks and acknowledgements are certainly in order for the production of this issue: to all the contributors for their patience in seeing their work reach publication at long last, to all of the editorial board for their work in reviewing and editing the submissions contained herein, to Kanta Dihal for her continued contributions and guidance, and to Matthew Gracey-McMinn for his assistance with review and support of academic affairs.

Bradley Blankemeyer
Academic Affairs Officer

The Boundaries of Discord: Italy's Secret War Aims and the Treaty of London (1914-15)

Stefano Marcuzzi

Italy's intervention in the First World War on the side of Britain, France, and Russia in May 1915 was a major achievement for the Entente's diplomacy. As John Gooch stressed in his book *The Italian Army and the First World War*, this proved to be one of the decisive factors for the Allied victory.¹ On his part, the German historian Holger Afflerbach claimed that, had Italy supported its former allies, Germany and Austria-Hungary, or had it at least remained neutral, the conflict would have been likely to finish in a partial, if not complete, victory of the Central Powers.²

Despite its importance, Italy's involvement in the conflict has been commonly underestimated and misunderstood. The Italian intervention has too often been described as a trivial *Giro di Valzer* ("Waltz turn"). Both in Western and Austro-German scholarships, Italy has usually been seen as the country which, in true Machiavellian fashion, betrayed its allies to find itself on the winners' side. Italian historiography, on the contrary, has rarely looked at other schools, and has simply justified, almost exclusively in Italian eyes, the actions of its country with the need to complete national unification – the Great War is frequently called The Fourth War of Independence in Italy.³

Therefore, the real reasons behind Rome's shift in alliances have often been overlooked. It is impossible to trace here a new history of the secret talks that led to the Treaty of London and the 1915 Italian intervention. I will limit myself to analysing a specific aspect of Italy's foreign policy that played a major role in the final outcome of the war and influenced the disappointing aftermath – at least for Italy – at the Paris Peace Conference: the problem of the two conflicting principles behind Italian territorial claims, which lie at the heart of Rome's secret war aims.

On August 3rd, 1914, as the process that had started on July 28th with the Austro-Hungarian declaration of war on Serbia was escalating and dragging all the other great powers into a much wider war than expected, the Italian government declared its neutrality. Rome had always felt that it was treated more like a client than an ally by Germany and Austria-Hungary, and it was irritated that Vienna only consulted Berlin before deciding upon military action in Serbia, which had taken Italian statesmen by surprise. Italy's motivation for its neutrality was that the Triple Alliance, to which it adhered since 1882, was a defensive treaty, while Austria-Hungary in this case was the aggressor. But

the real issue behind Rome's official position was an often-neglected article of the Triple Alliance pact. Article VII stated Italy's right to "compensation" in the case of unilateral Austrian expansion in the Balkans. Despite the declaration of neutrality, Italy was still ready to support its allies if Austria-Hungary was willing to respect article VII. The obvious territorial compensation that Italy claimed was the so-called "unredeemed lands": Italian territories still under the Austro-Hungarian empire, in particular the provinces of Trento and Trieste.

The debate and diplomatic dispute over article VII dragged on for months. Berlin intervened to push Vienna towards reconciliation with Rome, by offering the Italians the Trentino while guaranteeing the status of "open city" to Trieste – but without success. For the Austro-Hungarian Empire it was a matter of both political prestige and concern; giving in to Italy would have meant sparking off a series of repercussions and potentially similar claims from other ethnic minorities in the empire. The reasons behind Austrian stubborn refusal to reach a compromise with Italy⁴ were solid. However, Vienna's adamant position allowed the Entente powers to make their own diplomatic move.

Already in early August Rome was contacted through the Italian ambassador in Petrograd, Andrea Carlotti with a joint offer from France and Russia that would grant Italy Trento, Trieste, and freedom of action in Albania, if it joined the Allies.⁵ Britain made an independent and unofficial offer as well, when on August 6th the Italian ambassador in London, Guglielmo Imperiali, received a surprising visit from Baron Alfred Rothschild who stressed the "invaluable advantages" Italy would bring the cause of peace, if it put itself on the side of the Allies, "as Austria and Germany certainly could not resist much longer against all the great powers". Rothschild concluded that, if Italy had "any concrete proposals to make", he would have them examined "by someone willing to take them with benevolence".⁶

Rome replied to the Allies in a friendly but cautious way on August 14th.⁷ The Italian Minister for Foreign Affairs, Antonino Di San Giuliano, who had been in charge of foreign policy for four years, set up the first talks with the Entente powers out of sheer prudence. It was not before October 4th that a telegram was sent from Rome to Imperiali with the first draft of the Italian proposal for the Entente. Italian territorial claims were largely inspired by the principle of nationality, including Trento and Trieste with a few adjustments to be made regarding northern Trentino and Istria.⁸

But Minister Di San Giuliano fell suddenly ill and died on October 16th, 1914. He was replaced by Sidney Sonnino, a more difficult personality and a less

experienced minister, who was also far more ambitious and impatient than his predecessor. On October 18th the Italian Prime Minister Antonio Salandra delivered a famous speech proclaiming the new principle of *sacro egoismo*, “sacred egoism” in Italian foreign policy, according to which Italy would now pursue its national interests with greater decisiveness and firmness. Considering his strong personality, Sonnino appeared to be the right man to implement such a policy.

It was at this stage of the talks with the Entente that an increasing imperialist ambition began to take shape within Italian claims. Salandra and Sonnino, both conservative politicians, meant to establish a new balance within the Italian Liberal party and shift the axis of power back to the right wing, opposing the previous tendency by former Prime Minister Giovanni Giolitti, who had leaned more toward the left. Salandra and Sonnino sought the support of the Nationalists and worked to link the often sincere and spontaneous patriotic desire to complete national unification by the Centre-Left irredentists of the *Risorgimento* tradition, with the imperialist thrust of the extreme-Right interventionists like poet Gabriele D’Annunzio and former Socialist Benito Mussolini. Salandra and Sonnino’s political gamble was to unite a newly-born country – still fragmented internally – before the start of the war; and their final war aim was to make Italy a “real” great power by acquiring Italian and non-Italian territories in the Italian Peninsula, the Balkans and even the Ottoman Empire.

Of course, the official motivation for Italy’s intervention against its former allies remained the liberation of the “unredeemed lands”. The undeclared reasons behind it have only emerged in recent years, following the publication of Imperiali’s diaries, and the release of his personal papers that are still being catalogued in the Historical Archive of the Senate in Rome. The Italian imperialism that emerges from his writings – even though Italian historiography has long denied or minimised it – sets its aims primarily in the Balkans. Italian ambitions in that region was nothing new – it took shape most probably with the annexation of Venice in 1866, as Dalmatia had been a Venetian dominion – but for the first time it assumed a clearer and more determined profile.

In the talks with the Entente during the following months, between November 1914 and April 1915, Italian requests surprised Imperiali himself. On February 16th, 1915, when negotiations with the Entente entered a decisive phase, Imperiali received a memorandum in which Sonnino set out the final draft of Italian conditions for joining the Entente. The ambassador’s dismay was justified. The telegram of October 4th, 1914 requested to set the Italian frontier at Quarnaro, so as to include Trieste and Istria.⁹ The memorandum¹⁰ of

February 16th, on the other hand, included also a large part of Dalmatia.¹¹ Around 230,000 German-speaking Tyrol people, over 700,000 Slovenes and Croats and 650,000 Italians lived in the territories now claimed by Italy. Imperiali was also surprised that the Italian town of Fiume, on the Adriatic coast, was left out, because it was supposed to be the last port left to the Austro-Hungarian Empire after the war.

The new Italian claims were grounded on the principle of “strategic security”. For its national safety Italy needed strong and secured borders, namely an unchallenged hegemony over the Adriatic. Naturally, the concept of “national security” is relative and can be extended indiscriminately. Precisely for this reason, in the logic of “sacred egoism”, the fulfilment of national unification and an expansionist thrust co-existed without any evident contradiction, as others would later point out, especially American President Wilson.

The Treaty of London was finally signed on April 26th, 1915, after several amendments to Italian claims were made by the Allies, primarily to meet Russian objections. But still, the territories promised to Italy were significant: Trentino and South Tyrol, with the frontier at the Brenner; Trieste and Istria as far as Quarnaro; Dalmatia; a protectorate over Albania; and undefined compensations in the case of a break-up of the Ottoman empire followed by colonial acquisitions on the part of Britain and France.¹² Such an expansion would have really made Italy, “the least of the great powers”,¹³ a great power itself.

However, things went differently. The ambiguity of Italian claims was based on two very different principles and it emerged at the Paris Peace Conference of 1919. One was the unification of the “unredeemed lands” according to the principle of nationality, the other of pure imperialist expansion, albeit masked by the principle of “strategic security”. The collapse of the Austro-Hungarian Empire brought about a rough dispute between Italian diplomats and the representatives of the Yugoslav minorities of the empire, willing to establish their own new and independent state on the Adriatic coast of the Balkans. Rome faced the tenacious hostility of the promoters of the principle of nationality, Wilson in particular.

At the same time, domestic unrest was spreading in Italy. The Nationalists claimed Fiume, and D’Annunzio was even ready to march on the city with a legion of volunteers. To satisfy the Nationalist demands Sonnino gave up many of the territories that had been promised to Italy, in particular the colonial compensations, requesting Fiume as their replacement. Rome looked at London as the guarantor of the London Treaty, but even the British could do little, since now it was Washington that dominated international relations. In

the peace treaty, which was in many respects imposed on the Italian government by President Wilson, Italy was denied the largest part of Dalmatia, including Fiume.

The bitter outcome of the Peace Conference gave rise to the myth of the “mutilated victory” in Italy, which offered food to the political turmoil from which Fascism would later emerge. In the ultimate analysis, the ambitious – but ever ambiguous – foreign policy pursued by the Italian ruling class in 1915-1919 played an important part in bringing about the crisis of Liberal Italy in 1922.

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² H. Afflerbach, D. Stevenson, *An improbable war?: the outbreak of World War I and European political culture before 1914* (New York, Oxford: Berghahn Books, 2012), p. 136.

³ E. Decleva, *L'Italia e la politica internazionale dal 1870 al 1914. L'ultima fra le grandi potenze* (Milano, Mursia, 1974), p. 167.

⁴ Vienna eventually came to offer Trentino to Italy, but only in February 1915, when Rome had already turned to the Entente, and it was too late.

⁵ C. Sabini, *Le fond d'une querelle (Documents inédits sur les relations franco-italiennes 1914-1915)* (Paris: Grasset ed., 1921), *Livre Noir*, II, pp. 299-230.

⁶ DDI, V Serie, 1914-1918, vol. I, Imperiali to Di San Giuliano, 7 August, 1914; *ivi.*, 10 August, 1914.

⁷ A. Salandra, *L'intervento dell'Italia*, (Milano: Mondadori, 1930), pp. 5-6, 23-24.

⁸ S. Sonnino, *Carteggio 1914-1916*, edited by P. Pastorelli (Roma-Bari, 1974), pp. 51-63.

⁹ DDI, V Serie, Vol. III, doc. 4, pp. 4-5.

¹⁰ ASSR, Fondo Imperiali, b. 2, f. 10, Patto di Londra, Telegrammi, sf. Memorandum delle condizioni e dichiarazioni di non concludere pace separata.

¹¹ M. Thompson, *The White War: Life and Death on the Italian Front 1915-1918* (London: Faber, 2008), p. 31.

¹² ASSR, Fondo Imperiali, b. 2, f. 10, Patto di Londra, Telegrammi, Testo del Patto di Londra, Art. 16.

¹³ See: R. Bosworth, *Italy, the Least of the Great Powers: Italian Foreign Policy before the First World War* (Cambridge: Cambridge University Press, 1979).

Orthodoxy, Heresy, or the Grey in Between? John Cassian and Early Medieval Theology

Jennifer Chaloner

Our modern society has a need to define and categorize. The dawn of modernity in the sixteenth century saw scientists striving to place every living thing in its own category, creating an elaborate system of taxonomy. Everything and everyone has a label so that it may be filed properly in our minds: foods are healthy or unhealthy; countries are first, second, or third world; whole societies are labelled as primitive; people are dyslexic, homosexual, anorexic, black, religious, and so on. These labels help us to order our world, but they also allow us to dismiss whole categories of things and especially people at once.

In the study of history, we must be aware of how our modern worldviews colour our interpretation of the past. Our desire to categorize does not always line up with the way earlier peoples saw their world. Early medieval heresy is a good example of this. Some beliefs, such as Pelagianism, Nestorianism, and Donatism, were considered heretical by the Catholic Church and formally condemned; others, such as the idea of apostolic poverty, were ignored or tolerated at certain times and in certain measures; and still others, such as was the case with St. John Cassian's theology of grace, were tacitly accepted by the Church. Thus, the early Catholic Church accepted a grey area in theology, an area which fell between orthodoxy and heresy.

John Cassian was an early fifth-century ascetic monk and author who had settled in southern Gaul, probably Marseille. He was a defender of orthodoxy, commissioned to write a treatise against the Nestorian heresy by the future Pope Leo I. He also wrote two extremely popular works concerning spirituality and the monastic life. In one of these works, called the *Conferences*, Cassian outlined his view of grace and human agency. Cassian argued that the introduction of sin in the Garden of Eden had corrupted human will so that it is now unable to will any good without an infusion of God's grace. In some cases, however, the human will can make a small, pre-emptive step toward conversion; however, it is impossible to obtain salvation without God's grace then bringing the person the rest of the way. Conversion, then, is impossible without God's grace. After conversion, however, Cassian believed the human will capable of choosing the good, although God's grace was still necessary to bring the good about. It was this view which prepared the ground for accusations of heresy.

His accuser was Prosper of Aquitaine, now living in Marseille, a layman and a devoted admirer of Augustine, Bishop of Hippo in Africa. The aged Augustine had published several treatises concerning his own doctrine of grace, as well as many other works, some against other condemned heresies, particularly Donatism. Augustine, like Cassian, believed that sin had fully corrupted the human will, but denied that conversion had any effect on its ability to choose what is good. God's grace was the only agent in all good works; Augustine thereby denied human agency and adopted a doctrine of strict predestination. God chose the elect to be saved, and he predestined every good work. Prosper was disturbed by the conflicting theology he heard bandied about in Marseille and other parts of Gaul, noting the differences between it and what Augustine espoused. He branded it heresy, and unleashed a torrent of virulent writings against it.

Later, early modern historians, with their need to categorize, labelled this heterodox view of grace 'the semi-Pelagian heresy', and historiography has looked through this lens ever since (see Backus and Goudriaan, 'Semipelagianism'). The use of the term 'semi-Pelagianism' has recently been questioned by several scholars, but it is the label of heresy I wish to address in this paper. If heresy is considered to be the opposite of orthodoxy, that is, a belief that is at variance to the established beliefs of the church, then Cassian's theology does not fit the bill. Rather, despite its being stamped as heresy by Prosper, Cassian's theology in the debate on grace was widely accepted within the church, yet it was not formally declared as orthodox. It seems to have fallen into a grey area between orthodoxy and heresy, an area, perhaps, with which the early medieval church was more comfortable than we are today.

Augustine's doctrine of extreme predestination did not find popularity in Gaul; many thought it to be no more than fatalism. His critics argued that Augustine's doctrine meant that Christ only died for the elect, and not for all people, and therefore contradicted I Tim. II.4: '[God] will have all men saved, and come unto the knowledge of the truth.' Instead, it was Cassian's more moderate view which was the prevailing belief. Prosper himself demonstrates this when he writes to Augustine, declaring that the heresy had spread from Marseille to other parts of Gaul (see Augustine, *Epistola* CCXXV.7, in *PL* 33:1106). He even says that bishops subscribed to the heresy as well. The best evidence, perhaps, for the widespread acceptance of Cassian's view is the great approval with which his books were read. We have manuscripts from all over western Europe, as far away as England, from before the twelfth century; this distribution is remarkable and indicative of his reputation. Furthermore, many medieval authors who were renowned in their own right used Cassian extensively in their writings: Pope Gregory the Great and Bishop Caesarius of Arles are good examples (Leyser, *Authority and Asceticism from Augustine to*

Gregory the Great, 163-4 and 83, respectively). Ensuring Cassian's reputation for the centuries to come, St. Benedict recommended the reading of Cassian's *Conferences* in his *Rule of Benedict* which was used throughout western Europe as the basis for Benedictine monastic organization (Benedict, *Rule of Saint Benedict*, LXXIII.5). All these influential and respected (and orthodox) people did not seem to be bothered by Cassian's theology, or any accusation of heresy. Gennadius of Marseille, Cassian's biographer, sums it up for us when he tells us that, though Prosper disagrees, 'the church of God finds [Cassian's works] salutary' (Gennadius, *De illustribus viris*, LXXXV).

In fact, not many people were interested in fighting alongside Prosper. Besides the evidence from Prosper's letters of dissent throughout Gaul, we know that several other writers wrote in support of Cassian's view. Vincent, abbot of Lérins, an island monastery off the coast of modern Cannes, and Bishop Faustus of Riez both wrote books espousing free will against predestination, and there were several pamphlets circulated, whose texts are preserved in Prosper's works. There is also an anonymous work, sometimes attributed to Arnobius the Younger, in which the author refutes Augustine's doctrine whilst claiming that the orthodox Augustine could not possibly espouse such an extreme doctrine of predestination; this allowed him to side-step attacking Augustine directly (Schaff, *History of the Christian Church*, vol. II, 863-4). What we do not have is much evidence of other people attacking Cassian's theology until 519, nearly a century after Cassian's death. At this time, a group of monks (known as the 'Scythian monks') in Constantinople agitated against Faustus of Riez's book *On Grace*, demanding it be formally condemned by the pope (Markus, 'The Legacy of Pelagius', in *The Making of Orthodoxy*, 223-4). The intervening decades, though, did not see a sustained controversy on the nature of grace and human agency.

Prosper had done his best to discredit Cassian's theology. He wrote to Augustine, requesting his help in the dispute (see Augustine, *Epistola CCXXV.7*, in *PL* 33:1106); Augustine answered by sending two new treatises, *On the Gift of Perseverance* and *On the Predestination of the Saints*, expanding upon his theology of predestination and grace. Prosper himself also wrote a book against Cassian, entitled *Against the Conferencer*, in which he attempted to destroy the 'heretical' theology he found in the *Conferences* and hold up Augustine's doctrine as truth. He even went to Rome to pay a visit to Pope Celestine, describing the situation in Gaul, and requesting the pope's intervention. This, however, did not have quite the effect he had hoped it would. Instead of condemning the 'heresy', Celestine wrote to the bishops of Gaul, censuring them for not keeping their priests in order (Celestine I, *Epistola XXI* in *PL* 50:528-30). No further action was taken. Prosper's campaign did not get a friendly reception.

Though Cassian's theology of grace was not formally condemned, neither was it formally declared to be orthodox. Though it took ten years from the time the Scythian monks declared Faustus of Riez's *On Grace* to contain heresy, the work was finally examined at the Council of Orange in 529. It was not condemned. Furthermore, another issue at stake at the same council demonstrated a similar reluctance to draw a line between the heretical and the orthodox on the matter of grace. Caesarius, Bishop of Arles, an enthusiast of both Cassian and Augustine, was accused of being a Predestinarian, someone who took the doctrine of predestination to unorthodox extremes. The accusation, spurred on by political conflict more than anything else, held no water as Caesarius was able to show himself to be a true follower of Augustine; Predestinarianism, he demonstrated, was a corruption of Augustine's doctrine. Thus, it was Augustine's doctrine which was upheld as truth. It was to his teachings that Caesarius appealed, and, ultimately, his adherence to them was what vindicated him.

If Augustine's teachings were endorsed, we would expect Cassian's variant doctrine to have been condemned. Yet this did not happen. In fact, the decrees from the council tell a surprising story of syncretism (Leyser, 'Semipelagianism', in *Augustine through the Ages*, 765). The first decrees underscore the absolute necessity of God's grace and the complete inability of the human will to will any righteousness – a statement of which Augustine would be proud. Further down the list of decrees, however, we find the concession that baptism sanctifies the will enough to make steps towards the good, with the help of God's grace – an assertion more in line with Cassian's theology of grace. On the issue of predestination, sticky as it was, the council was silent. Thus, instead of Cassian's theology being condemned, it was ultimately partially upheld, though it was still held in tension with Augustine's. This arrangement seemed pleasing, and the matter was not brought up again until several centuries later in the ninth century.

Hence, we find that the Gallic church was comfortable to live without defining the issue. Where we see a glaring contradiction, they were quite happy to endorse both sides as true. Augustine was certainly a theological powerhouse who could not be dismissed, regardless of the extremity of his theology. Cassian, however, was a local holy man, renowned for his ascetic virtue, carrying Gallic authority in his own right, a kind of authority that the African bishop across the Mediterranean did not have. Both men were highly respected, and the Gallic church saw value in both of their theologies, despite being opposed to one another.

Our desire to categorize, define, and draw decisive boundaries between things is a modern obsession. This becomes apparent in the discussion of the early medieval church and the debate on the nature of grace and human agency as played out in Gaul in the early fifth century. Some beliefs fell into the camp of orthodoxy, some into the camp of heresy, but, in this case, the distinction was not so clear. The grey area between demonstrates that the boundary between orthodoxy and heresy was not clear cut. Therefore, Prosper's label of 'heresy' for Cassian's theology cannot be the impetus for us to dismiss it as such. John Cassian's theology, while never endorsed and also never condemned, was widely believed, despite being in conflict with the Augustinian belief formally upheld by the church. This unwillingness to put Cassian's theology in either the 'orthodox' or 'heretical' box is hard for us to understand. We must try, however, for we can only hope to learn from the people of the past if we refuse to make them conform to our ways of thinking, and let them speak for themselves.

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Optogenetics: Breaching the Boundary of Biology's Black Box - "A Very Complicated Place"

John Snape

It contains an estimated 10^{11} individual cells, each being one of 10^4 different cell types and making 10^5 connections with other cells (1, 2). It weighs just 1.4 kg, and yet it is the site of every thought and feeling you've ever had (3); Professor Karl Deisseroth (Stanford University) says it is "wonderfully, and unfortunately, a very complicated place" (4). This structure is the human brain, and the cells are neurones. They maintain a 'resting potential' across the cell membrane, with the cell interior negatively charged compared to the exterior. Neurones transmit signals called 'action potentials' when protein channels in the cell membrane open and allow positively charged particles ('cations') to enter the cell, making the interior more positively charged and perturbing the resting potential. This occurs sequentially along the length of the cell, and is followed by the opening of another type of protein channel that allows a different cation out of the cell, making the exterior more positive to restore the resting potential (5).

It's not too outlandish to venture that the brain represents something of a "black box" in biology. Though we can observe its inputs and outputs, up to now studies of the internal workings of the living brain have been limited by an inability to directly generate action potentials in specific neurones. Though it is possible to surgically insert electrodes into the brain to electrically trigger action potentials, this procedure is invasive and stimulates every neurone around the electrode. Though it is also possible to chemically alter the brain using drugs, this is slow and even less precise than electrical stimulation. As early as 1979, the need for greater precision in neurological studies was highlighted by Francis Crick (Nobel laureate for the discovery of the DNA double helix) (6, 7).

Controlling Neurones with Light

The boundaries limiting investigation of the brain were pushed back significantly in 2005 (6) with the conception of 'optogenetics' – a wide variety of technologies that involve modifying a cell's genome to produce 'reporter proteins' for monitoring neural activity or 'actuator proteins' for influencing neural activity. Optogenetics is perhaps most associated with 'opsins' (8), channels in the membranes of cells that transport cations upon exposure to light (8). Opsins are used to mimic the action potential generation or inhibition as described above, by allowing cation flow into or out of neurones to modify

the resting potential.

How Optogenetics Works

Opsins are inserted into neurones via genes – DNA sequences that cells can use to create the opsin. The microbial gene is modified so that it has an additional DNA sequence at the start called a ‘promoter’, only useable by specific neurons in the brain. The modified gene is commonly incorporated into a virus – essentially a piece of DNA or RNA encased in protein – that infects and introduces the gene into the neurones. The virus most often used adeno-associated virus (AAV), which does not cause disease and enables fast integration of the gene into the DNA of the infected neurone (1, 9, 10). Each neurone exposed to the virus receives the modified gene, but only those neurones that recognise the promoter can use the gene to make opsins. Hence, a small number of neurones can be controlled – as few as two in 200,000 (11) – leaving all other neurones unaffected.

Upon receiving light, the light-absorbing component of the opsin transiently changes shape such that the channel opens and permits cation flow. A second type of opsin responding to a different colour of light can be inserted into the same cell, to inhibit action potential generation by permitting cation flow out of (or negatively charged ‘anion’ flow into) the cell (8).

In order to deliver light to neurones in a model organism, such as a mouse, a light-emitting optical fibre – as thin as a human hair and as light as 2 g – is inserted into the brain (4, 8).

Precision and Speed

Optogenetics allows the stimulation of a selected subset of neurones in milliseconds, providing extremely high precision without sacrificing speed of stimulation. Optogenetics has fewer side effects due to this precision, and the procedures for optogenetic modification are much less invasive than those for electrode insertion (1, 4). The great precision of optogenetics – its “exquisite cell specificity in the intact animal” – earned it the award of Method of the Year 2010 from *Nature Methods* (12).

However, the experimental use of opsins is associated with drawbacks. Being foreign proteins, opsins could induce non-physiologic states in cells by, for example, changing the properties of the cell membrane (13). Furthermore, the viruses used to insert the opsin genes into neurones can only hold a total of approximately 15 kb of added DNA (8). These issues are being addressed by developing non-viral methods of gene transfer; genes can be inserted into large

loops of bacterial DNA called ‘plasmids’ that move through a cell membrane made temporarily leaky with electrical pulses (14).

Potential Scientific Applications

The use of optogenetics in scientific investigation is already bearing fruit. Professor Gero Miesenböck (Oxford University) has used optogenetics to validate a model of neural feedback; in this model ‘actor’ neurones give rise to a behaviour that is evaluated by both environmental feedback and by ‘critic’ neurones that fire when a particular behaviour is unfavourable. By placing an optogenetically-modified fly into a small chamber containing two partitioned odours, and stimulating the critic neurones each time the fly enters one of those odours, the investigator is able to make the fly remain in the region containing the other odour. By adding promoters to the opsin genes that different cells recognise, Miesenböck was able to narrow down the identity of the critic neurones to just 12 cells (11).

These experiments hint at a tantalising model in which intelligent behaviour may arise from physical interactions between cells – a model that could explain more complex phenomena such as personality and memory. This is yet another aspect of the boundary-shattering potential of optogenetics – breaking down barriers not only to research, but also between traditionally separate scientific disciplines like biology and physics.

Potential Clinical Applications

The rise of optogenetics has consequences beyond basic science alone; the boundaries of clinical medicine stand to be redrawn by the manifold uses of this powerful technology.

It is estimated that some 26% of Americans aged over 18 experience a psychiatric disorder in a given year (15). An example is posttraumatic stress disorder (PTSD) – an anxiety disorder characterised by re-experiencing (or avoiding stimuli associated with) an intensely traumatic event, causing hyperalertness and insomnia (16). PTSD can be treated using drugs like sertraline hydrochloride that chemically interact with the brain, but these are often associated with side effects such as headaches and nausea (17). A different approach was taken by the laboratory of Professor Edward Boyden (MIT), where mice were conditioned to display a fear response to a sharp audible tone associated with a brief (painless) shock. After the tone is associated with fear, just 10 minutes of repeated optogenetic stimulation of specific neurones at the same time as the tone is heard appears to override the fear response – Boyden suggests that this could one day be used as a treatment for PTSD (1).

Regulatory and Philosophical Issues

Often the removal of boundaries to scientific progress is concomitant with the identification of safety and ethical boundaries that must be considered. A European Medicine Agency reflection paper on AAV gene therapy (which could encompass the proposed optogenetic PTSD treatment above) lists a variety of concerns including the potential for unwanted transmission of the genes to future generations via inheritance and to other organisms via saliva and urine (18).

Moreover, the light inputs used to control neurones in optogenetics can be represented in binary code (e.g. '1' for on or '0' for off), which might one day be downloaded from or uploaded to the brain. Complex and personal emotions could be represented by a string of numbers, challenging the way concepts like love and cognition are defined and placing great demands on regulatory policy to specify how such data are protected and used.

Future Directions

Neural processes are not the only pathways that can be controlled using optogenetics. In 2009 Deisseroth replaced components of an opsin with those of a cellular signalling molecule, so that the light-sensitivity of the opsin could be used to trigger the biochemical pathway associated with the signalling molecule (10). A process already modified in this way is the movement of proteins within cells (12).

Opsins are now being developed that respond to infrared light or ultrasound frequencies, which are able to penetrate tissues deeper than visible light and could eliminate the need for implantation of optical fibres altogether (8, 10).

The optical fibre is also undergoing modification. Boyden has proposed the development of 3D arrays of optical fibres, each entering the brain to a different depth, to allow a form of 'high-throughput screening' of behaviours induced by stimulating different combinations of spatially separated neurons (1).

With the unveiling of the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) initiative in the US, putting \$100 million towards uncovering new ways of treating, preventing and curing brain diseases, there are definite goals to be achieved by emerging technologies like optogenetics (19).

The Rise of Optogenetics

Optogenetics serves as a compelling example of new technological advancement removing longstanding boundaries to scientific progress. Its swift adoption by the scientific community is testament to the fulfilment of a previously unmet need. Optogenetics could radically change the way the brain is investigated and its disorders are treated, but it also presents profound scientific and ethical issues yet to be resolved. Clearly the intricacy of the boundaries surrounding studies of the brain will be reflected in the technology needed to cross them.

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Radical Disruption: Jonathan Crary's 24/7: Late Capitalism and the Ends of Sleep

Laura Ludtke

Artificial light, especially electric light, is often charged with disrupting natural sleep rhythms. However, when the first electric arc lamps were introduced to city streets in the 1880s, they needed their carbon rods changed nearly every day and, like the gas lamps before them, only reinforced a divide between day and night that predated any system of artificial illumination. This divide was preserved because the lights required daily maintenance and did not burn throughout the night. With the introduction of a reliable incandescent bulb, electric lights soon did not need this continual maintenance; they were operated by a mechanical, centralised process. By the 1890s, the widespread introduction of electric lights in major cities had begun to alter this divide, these natural rhythms.

In reality, however, the relationship between electric light and the body was far more complex. To begin with, what we might call natural rhythms are in fact biological processes informed by the body's relationship with its external environment. We tend to consider these rhythms as 'natural' because we don't see them as the product of human interference. This distinction between 'natural' and 'artificial' is in any case a false one, as it tends to assume that technologies that are less complex are less artificial and invasive, while technologies that are more complex must be more artificial and more invasive. Fortunately, scientific research on sleep helps cut through the cultural baggage it has accrued.

Though such patterns were observed early in human history, the circadian rhythm as we now understand it is a relatively recent development (the term itself dates from the 1960s). It was not until G.T.W. Patrick and J. Allen Gilbert's study of sleep deprivation of humans in 1896, in which they kept their subjects 'awake continuously for about 90 hours', that we understood how prolonged lack of sleep affected 'reaction-time, discrimination-time, motor ability, memory, and attention'. Patrick and Gilbert's discovery that 'sleep and waking performance oscillate' formed the basis for a new field of study: chronobiology. And yet their work was also part of a larger interest in the influence of new technologies on the human body and its biological processes. This is particularly evident when we turn to contemporary critical examinations of the relationship between technology and the body, the most influential of which are Anson Rabinbach's *The Human Motor* (1992) and Tim Armstrong's *Modernism, Technology and the Body* (1998). Both Rabinbach and

Armstrong suggest that interest in the body's relationship to technology related to a shift in the 'perception of the body' that took place in the nineteenth century.

All of this is important to know because Jonathan Crary begins his exploration of the effects of the 'culture of global capitalism' in *24/7: Late Capitalism and the Ends of Sleep* (2014) with a series of anecdotes about sleep and the relationship between technology and the body. The first is about the U.S. Department of Defence's study of sparrows in order to learn how better to 'enable people to go without sleep and to function productively and efficiently'. Crary asks what is behind this desire to eliminate sleep. Do we assume that technological advances are positive and can change the body for the better, or do we question a trajectory that leads us to the eventual necessity of pharmaceutical developments such as Provigil?

In the second, Crary considers the tension between the individual and society where one's experience of the natural world is at stake. In the early 1990s, the Russian Federal Space Agency launched the Znamya project, an experimental chain of reflective satellites that would supply light and solar power in order to 'reduce energy costs for electric lighting'. Though initially conceived 'to provide illumination for industrial and natural resource exploitation in remote geographical areas with long polar nights', it was quickly expanded to 'include the possibility of supplying nighttime lighting for entire metropolitan areas'. When Znamya 2.5 failed in 1999 the project was abandoned. While the benefits to society of such an undertaking are evident, how great would the benefit have to be for any corporation or government to abrogate an individual's 'experience of the darkness of night and observe the stars'? This ambitious project is reminiscent of the *Colonne-Soleil* or 'Sun Tower' proposed by the French electrical engineers Amédée Sébillot and Jules Bourdais to commemorate the 1889 exhibition. While their proposal was ultimately unsuccessful (Gustave Eiffel was of course awarded the project) their tower belongs to the utopian ideal of a continuous day. As Wolfgang Schivelbusch argued in *Disenchanted Night* (1995), this ideal has 'transformed into the nightmare of light from which there was no escape'. We still may not be able to create the conditions for a continuous day, but for Crary such projects are a 'hyperbolic expression of an institutional intolerance for whatever obscures or prevents an instrumentalised and unending condition of visibility'. And yet, an individual may herself submit to such conditions, or find them imposed upon her, such as when convicted criminals are incarcerated.

Crary troubles this last point in his third anecdote, where he looks at the use of sleep deprivation as a part of the torture regime used to interrogate Mohammed al-Qahtani. He has been detained at Camp Bright Lights, one of the many black sites (Crary calls them 'dark sites') used by Americans to detain unlawful

enemy combatants since 2002. His treatment has been well-documented in the official log kept by the U. S. Government and likely inspired the interrogations of Ammar in the film *Zero Dark Thirty* (2012). Mohamedou Ould Slahi described similar and equally condemnable treatment in his memoir, *Guantánamo Diary*, recently serialised in *The Guardian*. But the Americans are not the first to use sleep deprivation for such purposes. Crary points to Stalin's use of such techniques, but there is also a literary precedent. In George Orwell's *Nineteenth Eighty-Four*, when Winston Smith is taken to the sinister 'place where there is no darkness' hidden within the Ministry of Love, Big Brother's superintendence over his body, and the extirpation of his self, are the natural consequences of an authoritarian, surveillance society. In any case, as Crary goes on to argue, we do not need an institution or group to deprive us of sleep: we will do it ourselves.

This is an idea that Crary develops over the course of the first two chapters, detailing the consequences of the 'incursion of the non-time of 24/7 into every aspect of social and personal life', in particular in the context of a pervasive consumer culture. Crary finds that the 'acceleration of novelty production is a disabling of collective memory, and it means that the evaporation of historical knowledge no longer has to be implemented from the top down.' The way in which we communicate and access information has, perhaps irreparably, 'ensure[d] the systematic erasure of the past as part of the fantasmatic construction of the present.' One is again reminded of Orwell and the Ministry of Truth, where the 'facts' of the past are altered at the point of its inception, and individuals become complicit in the destabilisation of their own history.

The third chapter is devoted to an exploration of the nexus between labour, capitalism, technology and modernity. It is here that Crary is at his most revolutionary. He proposes that we reconsider modernity as a 'hybrid and dissonant experience of living intermittently within modernized spaces and speeds, and yet simultaneously inhabiting the remnants of pre-capitalist life-worlds, whether social or natural.' He also proposes that our insatiable desire to consume information is inherently linked to an ever-advancing consumerism. We have adopted 'the idea of a continuous interface', that is, 'a relatively unbroken engagement with illuminated screens of diverse kinds that unremittingly demand interest or response'. Like any addictive behaviour, consumption is self-perpetuating to the point of self-destruction.

The superintendence of technology over an individual and her body is thus often self-administered. This is evident when we consider how we learn to self-distract. According to research performed by Gloria Mark at the University of California, Irvine, interruptions to workflows can be incredibly unproductive. Not only does it take an average of 23 minutes to return to work after each interruption, but interruption occurs at a rate allowing for only 11 minutes of

work between each one. Over time, the body gets used to such disruptions and will begin to self-disrupt: to check for new e-mail or updates to social media pages mid-task, even mid-thought. For Tristan Harris, speaking recently at the Oxford Internet Institute, the solution to this behaviour might well be a distraction-free function that would allow individuals to isolate themselves from the steady flow of disruptions for set periods of time. While such a function sounds promising, one wonders, as Crary often does, whether more technology is the best way forward.

The fourth chapter is devoted primarily to dreaming. In a few nimble pages, Crary traces the ‘multiplicity of dream experiences’ in Western culture: from Aristotle, who wondered whether dreams were ‘imaginative, sensory, or merely physiological processes’, to Freud, who relegated dreams to ‘a cordoned-off area of primitive irrationality’, to Philip K. Dick’s dystopic ‘experience of reification’ in *Do Androids Dream of Electric Sheep* and its cinematic adaptation, *Blade Runner*. Crary also considers the reciprocity between the waking and dreaming self, between the individual and the communal. He rightly points out that, today, the majority of us do not make the most of our dreams, increasingly unable to distinguish them from the ersatz dreams that appear to us in HD and HDRI.

Here it is most clear that *24/7* is an extension of Crary’s previous studies, which undertook to understand the rise of visual culture in the nineteenth century and the development of perception in the late nineteenth and early twentieth centuries. His explanation that in the nineteenth century, revolutions in media (e.g., photography, the kaleidoscope, the phenakistoscope, the zoetrope, cinema, and audio recording) ‘transformed the very possibility of “visionary” experience’ is one he first explored in *Techniques of the Observer* (1990), and *Suspensions of Perception* (2000). Unlike Crary’s first two books, both of which were published by MIT Press and are highly academic in nature, *24/7* has been marketed as a more popular work – despite his penchant for Jamesian phraseology. This is perhaps because the nature of Crary’s topic itself has broader appeal.

Importantly, Crary eschews making more judgments about the adverse effects of *24/7*, instead proposing connections and allowing readers to draw conclusions for themselves. *24/7* is neither good nor bad. It is ineluctable. This leads us to the paradox at the centre of Crary’s argument. If, as he contends, ‘[s]leep is an uncompromising interruption of the theft of time from us by capitalism’ and if our sleep is increasingly interrupted or self-disrupted, what defence do we have against capitalism and its insidious mechanisms? What resistance can we mount against its invasiveness?

There are some who will argue that with the destruction of privacy, and the

integration of technology and the body, will come an increase in accountability on the part of governments and corporations, as well as benefits to the individual who will profit from better, more personalised service. But for others, this seems incredibly optimistic. It is naive to say that technology can and will be egalitarian. History, and literary imaginings of the future, have shown us otherwise. It is equally true that modes of resistance can often leave one feeling paranoid and isolated. In the 1960s, resistance took the form of the realisation that 'happiness could be unrelated to ownership, to acquiring products, or to individual status, and could instead emerge directly out of the shared life and action of groups'. Though the final sequence of the series finale of the critically-acclaimed and zeitgeist-friendly *Mad Men* might suggest otherwise, where the hippie idyll is subverted into the capitalist dream of 'Hilltop' – the real world Coca-Cola's memorable advert from 1971.

Unfortunately, since the 1980s, a counter-revolution has continually eroded this realisation. Think of austerity, for example, and you get two completely contradictory visions: on the one hand, post-war rationing and working towards a common cause – the founding of the venerable yet ailing NHS, for example – and on the other, the disparity between tax breaks for the 1% and budget (or benefit) cuts for the rest. In the latter scenario, not only does it become harder to work together or to help others, but the '[p]ossibilities of non-monadic or communal life are rendered unthinkable'. As Crary says, '[o]ne of the main forms of control over the last thirty years has been to ensure there are no visible alternatives to privatized patterns of living.' How bleak.

And yet, there is hope. In the last part of the book, Crary turns to Jean-Paul Sartre to develop a theoretical model for resistance. In the *Critique of Dialectical Reason*, Sartre outlines the concept of the 'practico-inert' to account for the forces that keep the individual 'inert' in society, and 'seriality', which is the manifestation of this powerlessness. While Sartre acknowledges that 'seriality' is ubiquitous, he points to ways in which we can develop resistance to it. The most important of which, articulated by Deleuze and Guattari in their reading of Sartre, is simply a 'perceptual act—a non-habitual mode of looking.' In this way, one might 'discern, in a moment charged with embitteredness or anger, a condition of commonality and interdependence', a condition which, in turn, could lead to the realisation that 'what one wants most can never be achieved individually.' But where does social networking and media fit into Sartre's model? Crary is ambivalent, concluding that '[a]ll the 24/7 electronic interfacing, all the mass immersion at a micrological level in contemporary technological culture, might easily be said to constitute a new negative unity of passivity and alterity.'

In the end, Crary returns to the idea of sleep as a place where the individual might safeguard the self against the outside world. Though we may

increasingly dream of full inboxes and unending listicles, we should strive to hold sleep ‘as a radical interruption, as a refusal of the unsparing weight of our global present, of sleep which, at the most mundane level of everyday experience, can always rehearse the outlines of what more consequential renewals and beginnings may be.’

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Ancient records of mountain building in the New England 'Big Garnet' Schist

Anna Bidgood

Over 260 million years ago, Africa, part of the continent Gondwana, collided with North America and Europe, creating the supercontinent known as Pangaea. This mountain building event, or orogeny, formed what is known as the Appalachian Mountains. This mountain chain has since been eroded down to its deep crustal levels, allowing us an insight into the processes that occurred at depth, such as ductile deformation and metamorphic mineral growth.

In the forests of western Massachusetts, sparse outcrops of rocks record the compression and burial of ancient mudstone to depths of around 25-30km (7-8kbar). This unit, known as the Hoosac formation extends from Vermont, in the north, down to Connecticut in the south. The mudstone was deposited around 500 million years ago and has since been subject to two deformation events within the Appalachian orogeny.

These rocks contain the metamorphic mineral garnet, which grew in response to increasing temperatures and pressures. Garnets are excellent recorders of the geological histories of rocks because they can trap small crystals of other minerals as they grow, preserving the combination of minerals present at different points during the crystallisation of the rock. Garnets change composition as they grow, reflecting the temperature and pressure of their surroundings. These changes are recorded as concentric zones seen within the mineral. It is for these reasons that garnets are a useful tool for interpreting the geological history of a deformed region.

The garnets of the Hoosac Schist are particularly interesting because they show distinct core and rim compositions, indicating that a change in conditions occurred during garnet growth. It has been hypothesised that the core and the rims of the garnets grew in response to two different metamorphic events, separated in time by millions of years. It is this hypothesis that I aim to refute, by determining if I can describe the growth of the garnet by one pressure-temperature path created by a single tectonic collision.

In order to extract information from these rocks, I made thin sections and studied them under the optical microscope. This allowed me to identify the minerals present in the samples, and determine which order they grew in and when they grew relative to the deformation of the rock. I measured the mineral chemistry using a Scanning Electron Microscope, to look at the change in

major elements such as iron, magnesium, calcium and manganese across the core-rim boundary within the garnet. The core-rim boundary and the major element profiles are illustrated in figure 1 from low temperature (garnet zone) to high temperature (kyanite zone).

I found that the mineral inclusions present in the garnet cores, are very different from those found in the garnet rims, indicating a change in conditions during growth. This change occurred over what seems to be a very sharp boundary, where the pattern of minerals in the core is very different to the pattern in the rim. But, by looking at the presence of chemical elements in the garnets, although there is a change in composition from the core to the rim, it is a gradual one. This would suggest that the garnet was not formed in two separate events but instead, in a singular, continuous one.

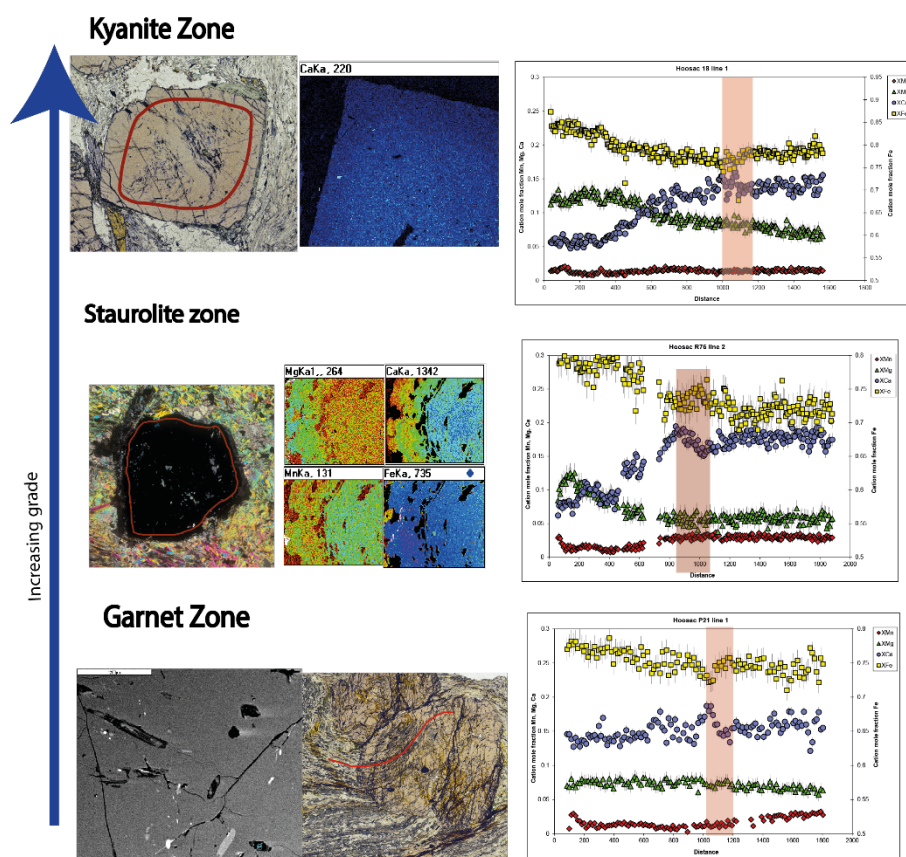


Figure 1 Photos of rock thin sections showing a large garnet in 3 samples of increasing pressure and temperatures (garnet zone to kyanite zone). The core to rim boundary is marked by a red line on the garnets, with major element maps showing the change in garnet compositions from core to rim. The major element profile is taken from core (right) to rim (left) and shows the chemical change becoming more pronounced with increasing pressure and temperature.

By studying these garnets, I have been able to describe the characteristics of their growth and estimate the maximum depth and temperature that the rocks were taken to. I attempted to model the evolutionary history of these rocks by mapping out the expected combinations of minerals which would be present during the deformation of a mudstone at different pressure and temperature conditions. This allowed me to identify the conditions of garnet core growth and garnet rim growth, describing a growth history over which different mineral reactions took place. My results showed me that the measured garnet compositions in the core and the rim, would have grown during the period of accelerated garnet growth (highlighted in figure 2), where a large proportion of the garnet grew over a small temperature range. This growth occurred at around 4-6kbar (14-21km) and 530-570°C.

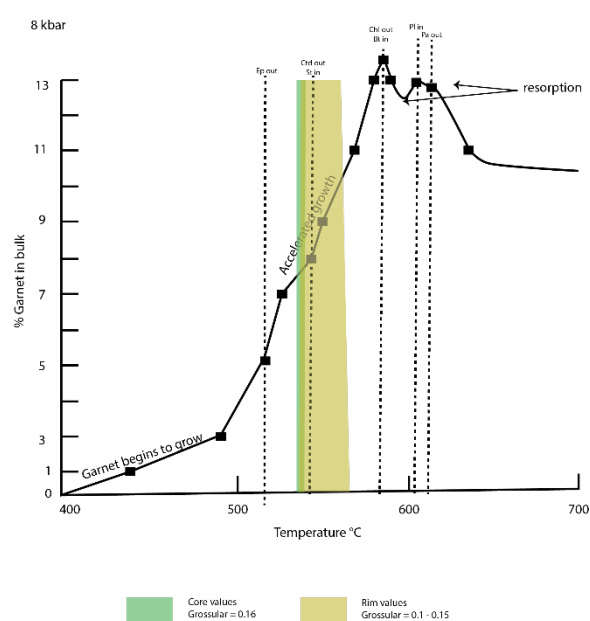


Figure 2 Profile of garnet growth with increasing temperature. Coloured bands show garnet core and rim growth which both occur during accelerated garnet growth.

Combining the results of the observations of the rocks and the predicted models, allows us to draw interpretations as to how these garnets grew and the geological history of the rock. The gradual change in garnet compositions and the fact that they correspond to a period of predicted, accelerated garnet growth, suggests that the garnets formed during a single continuous mountain-building event rather than two separate collisions.

Using this information furthers our understanding of the evolution of the crust, plate tectonics and processes occurring deep in the crust during mountain building. This may provide us with an analogue as to what is happening beneath active mountain belts, such as the Himalayas, today.

On Boundaries and Boats

Stephanie Kumah

Boundaries are not simply physical demarcations forged in sand or soil. Boundaries can be virtual, imagined, or internal. Boundaries are powerful. The boundaries that separate one state from another can shape opportunities and possibilities for those living within its bounds. As a student studying migration, I am well aware that boundaries are not deterministic; we all possess agency. Yet, this agency must act within the parameters of structure – namely, that of boundaries.

Undeniably, boundaries are often taken for granted. For those of us born in Western Europe or North America, international doors open without much effort. Access to the global playground is simply granted. What is more, for those with significant resources, this access need not even be granted; such access is simply available.

Surely, we all face bureaucratic hurdles in accessing the global sphere. Passports, visas, and other documentation are often required. Yet, for those born in states at the top of the global hierarchy, these “hurdles” are mitigated by boundaries that confer an elite belonging in the global sphere, one that ultimately renders these hurdles largely symbolic - formalities that simultaneously espouse equality while perpetuating inequality on the basis of supposed difference.

In recent weeks, images of migrants stranded at sea have become ubiquitous. From the tragedy in the Mediterranean to Rohingya migrants packed on boats on the shores of Indonesia, Thailand and Malaysia, recent history seem to be replaying itself, like a scratched CD skipping on the first line of a chorus that has become painfully familiar.

As these events unfold, journalists and scholars clamor to share their solutions with respect to the “migration problem”. “Close the borders”, they argue. “Increase restrictions”, they bellow. “Development holds the key to stemming migration from the developing world”, they claim. Yet, what each of these assertions fail to recognize or acknowledge is that migration is not a *fait accompli*. Migration has historically been and will continue to be an essential part of the human experience. We are an inherently migratory people.

Yet, despite this, the desire of migrants from the developing world to move is perceived as aberrant, problematic, and without precedence. Migrants are

viewed as the problem, while on other, distant shores those deemed “expats” are welcomed with open arms. Boundaries problematize *some* migrants but valorize others.

A shift in perspective is needed; we must realign our perspectives about migrants and migration with the realities of boundaries - particularly their power to vilify and to valorize. If we continue to view migrants, and not the inherent inequality of boundaries, as the problem, the lives of migrants will continue to be lost at sea.

Is the Earth Unique? What the different rocky bodies in our solar system can tell us about planet formation

Helen Ashcroft

One of the major projects undertaken by astronomers at the moment is the search for Earth-like bodies orbiting stars other than the sun, and to see whether life could form and be supported elsewhere across the universe. For a planet to support life as we know it, it has to exist in the 'habitable zone' around a star, where liquid water can exist. Advances in astronomy mean that more and more planets orbiting stars other than our Sun have been identified, some of which are similar in size to our Earth. However, in order to understand how or where life forms we need to understand how planets formed, and whether life on Earth is unique, unusual or fortuitous.

There are two chief questions to answer – what are planets made of, and what processes have occurred? To answer these questions we have to go back to the birth of our solar system. 4.567 Billion years ago a nebula (gas and dust cloud) collapsed due to gravitational instability forming our solar system. A spinning disk of gas and dust formed with the sun in the centre. The gas and dust particles started to clump together, gradually growing into larger rocky bodies. These planetisimals collided into each other, either smashing each other apart or accreting together, until eventually the planets formed and evolved to the way they are today. We can observe this accretionary process occurring in different stages around other stars across the galaxy.

The composition across the solar system was thought to be fairly homogenous to start with (roughly the same composition of the sun minus the amount of hydrogen and helium), however the elements that were able to condense into solid phases at any point depended on the distance from the sun, as there was a decreasing temperature gradient across the disk. Therefore rocky refractory elements and metal elements, like Calcium, Aluminium, Silicon and Iron condensed close to the sun to form the terrestrial planets (like Earth), and more volatile elements C, O etc. condensed further out forming the gas giants. The inner rocky planets and the outer gas giants are actually separated by two things – the snow line and the asteroid belt. The snow line is the distance away from the sun where it is cold enough for water to condense as ice. The asteroid belt is a region between Mars and Jupiter where hundreds of 10- to 100-km sized planetary bodies (asteroids) exist in the same orbit. Asteroids are the parent bodies to the samples of rock, which fall to the Earth's surface known as meteorites. They range in size from dust particles to 100s of kg blocks. The asteroid belt represents a region in our solar system where the accretion

process stopped prematurely. As the gas giant Jupiter grew, it swept up its surrounding gas and dust, including that of the asteroid belt. Therefore the asteroid belt preserves a snapshot into the processes and conditions of the early solar system and allows us to observe the building blocks of the larger planets.

During the accretion of the terrestrial planets, some planetesimals gained enough energy to melt allowing differentiation into different layers: an iron-nickel metal core, a rocky mantle and crust. This energy either came from short-lived radioactive nuclides for the smaller rocky bodies, like ^{60}Fe or ^{26}Al , or for the larger terrestrial planets from gravitational potential energy released during differentiation. These layers all have different chemical and physical properties and are separated by discrete boundaries. Each of these layers is represented in the meteorite record – we have metallic samples that were the cores of asteroids, and the igneous rocks of the mantles and crusts of other planets and asteroids. Differentiated meteorites can give us information on melting processes and timescales of larger planetary formation.

The other main types of meteorites are the undifferentiated ones; these are sample planetary bodies that have not undergone complete melting. These samples provide a lot of information the chemical composition of the solar system, and one type of undifferentiated meteorites – the CI Chondrites are observed to have the same elemental ratios of our Sun (minus the hydrogen and helium). As the mass of the sun is 99% of the mass of the solar system, we therefore have an estimate of the composition of the solar system, and a starting point for the formation of planets.

We can directly sample the Earth's crust, and we also have samples from the Martian and Lunar surfaces, from the rovers, which have landed there. There are also a few meteorite samples, which have travelled to Earth from these heavenly bodies. It is interesting to note that the composition of all of these basaltic crusts is incredibly similar, although there are minor variations in Ti, Al and Fe content. The differences between martian, lunar and terrestrial crust compositions are thought to be due to the differences in the temperatures and pressures of formation. For example, the Earth is larger than Mars and therefore higher pressures can be reached in the interior.

Although we have a few samples from the upper mantle of the Earth, we cannot directly sample most of the mantle or the Earth's core at all. The composition of the core is estimated from the density, which suggests that it is predominantly iron and nickel with up to 10 % of another element. Although meteorites can provide information about the cores of asteroids, most meteorites cannot be traced back to their parent asteroid, and therefore cannot be placed into a geological context. In fact, only one suite of meteorites can be

linked to their parent body – the HED (Howardite – Eucrite-Diogenite meteorites) which originate from the asteroid 4 Vesta. These meteorites are similar to the basaltic extrusive and cumulate rocks seen on Earth, Mars, and the moon. Vesta is the second largest asteroid in our solar system, residing in the asteroid belt with the dimensions $\sim 270 \times 270 \times 220$ km and has been one of the foci of the latest NASA *DAWN* mission where a satellite orbited it for one year between 2011-2012. From spectrographic studies of the asteroids in the asteroid belt, Vesta is thought to be the only remaining intact (more or less!) protoplanet with a crust, mantle and core. Therefore it is the perfect natural laboratory for investigating the processes of planetary formation and evolution.

After core formation the silicate portion of a rocky planet is thought to evolve in a magma ocean, where as the planet cools after initial early melting, different minerals start to crystallise and settle. The crystals that form are a function of pressure, temperature and composition. In the larger planets, global magma oceans are thought to form but in the smaller rocky bodies like 4 Vesta, not enough heat might have been present to completely melt the planetesimals and so heterogeneous amounts of partial melting may have occurred.

One interesting feature about Mars, the moon and Vesta are that none of these bodies have a significant atmosphere, and are all depleted in the volatile elements (e.g. N, C, H) compared to CI Chondrites – or their suggested bulk composition. These volatiles would have been present in these planets during the early stages of the planetary accretion, but would degas out of the planets through volcanism. Therefore it is believed that Venus, Earth and Mars would have started with a similar atmosphere in terms of composition and density. The Earth has managed to retain its atmosphere, through gravity however Mars, which is much smaller, could not hold on to its atmosphere. Venus is the same size as the Earth and so has managed to retain its own atmosphere, however as it is slightly closer to the sun, the initial water would have vaporized from the surface, concentrating the greenhouse gases, which in turn caused a runaway greenhouse gas effect.

From this understanding of planetary formation we can see that the process of terrestrial planetary formation is a fairly standard recipe– accretion of the planetary disk material occurs to build a number of rocky planets, the exact size and composition of which is dependent on nature of the final collisions between different protoplanets. All planetary bodies start with volatiles, however on most bodies they are degassed to space through volcanism, and when gravity is low an atmosphere cannot be retained. This would suggest that Earth is unlikely to be completely unique – lucky perhaps, in terms of its position in the ‘Goldilocks’ Zone, and its size.

Does Empirical Knowledge Have a Limit?

Kevin Busch

My aim in this short essay is to motivate a question that came to a head in the philosophical debate between so-called rationalists and empiricists during the Enlightenment. The question is: *is there anything we know but can't know empirically?* Before I venture an answer, some clarification is in order.

What is it to know something empirically? A first thought would be to know the kinds of things discovered by empirical scientists. For instance, in 2012 astronomers discovered that some soil on the surface of Mars contains chlorinated hydrocarbons. In 1954 biologists discovered that stannous fluoride prevents tooth decay. In 1863 chemist Louis Pasteur discovered that microbes in contaminated foods and drinks can be killed by intense heat. These are instances of empirical knowledge.

But in fact many examples from ordinary life will do. An infant opens a radio and discovers no one from the BBC living inside it. A professor discovers that by administering fewer exams she will increase attendance to her class. What seems to matter in all of these cases is not whether we get the knowledge in question through empirical science or in the course of ordinary life. Rather, they all count as instances of empirical knowledge because we get the knowledge in question from experience.

That said, there does seem to be a real distinction between two kinds of empirical knowledge. In one kind of case I get knowledge *through* experience. Suppose I look outside my window and discover that it is cloudy right now. I know that it is cloudy because I can see the clouds and cannot see sunlight.

In another kind of case I get knowledge *from* experience. Suppose I come to know through experience not the current state of the weather, but that I am in Oxford at noon on a day in late February. I know from past experience that during most days of winter Oxford sees little to no sunlight. I thus infer from past experience that it is cloudy right now.

My original question needs just a bit more clarification. For there do seem to be things we know but can't know empirically. We know, but can't know empirically, that all triangles must be three-sided or that all mothers must be female. Knowing these things is not the job of empirical scientists but rather of lexicographers who compile the *Oxford English Dictionary*. It is part of the definition of a triangle to have three sides. It is part of the definition of a mother

to be female. We don't go out and discover through and from experience that these things must be the case. Rather, we know these things by virtue of what the concepts of triangle and mother mean.

What I mean to ask, then, is the following: *is there anything nontrivial we know but can't know empirically?* By "nontrivial" I simply mean *not as a matter of definition*. Now, a question of this sort tends to rouse various responses. Some are surprised that such a question can even be sensibly asked, let alone answered. Some chuckle only to return their attention shortly to the more pressing affairs of human life. Some wonder if perhaps the questioner took too much sugar, or too much of something, in his or her morning coffee. Some, like yours truly, are genuinely baffled by the question and set out trying to answer it. Before you find yourselves slipping into one of the first three groups, I ask that you read a bit further.

As with many questions at this level of this abstraction, it is easiest to start with examples. In fact it would be enough if we found one thing we know but can't know empirically. Here is a formidable candidate: *every event must have a cause*. First let's see if this is indeed something we know.

The main evidence that we know this is that were we *not* to know it, we wouldn't be able to know a lot of the things we obviously know. Let me explain. Exceptional cases aside, when we feel an intensely hot pot on the stove we know that a flame preceded. Were it not true that every event must have a cause, how would one ever be justified in first venturing a guess at to what that cause *is*: in our case, a flame? One would have to throw up one's hands and feel at home with the constant prospect that whatever happens isn't brought about by something else. Let's just say that our knowledge that every event must have some cause makes it possible for us to come to know particular things through empirical science and ordinary life.

Moreover, the fact that every event must have some cause is not a nontrivial piece of knowledge. An event is usually defined as just a thing that happens. Sometimes it is more precisely defined as a change in some object or in the state of affairs. Either way, it is not a part of the definition of a thing that happens or a change of some sort that it is brought about by some prior happening or change.

Now, let's see whether we can come to know *empirically* that every event must have a cause. It doesn't seem that we can come to know this *through* experience. For if we could, we would at least need to have experience of every event. But none of us living today could tell through experience whether Socrates had indigestion on his thirtieth birthday (suppose he did). And no one at all could

tell through experience whether it became very hot one day 4 billion years ago, back before there was life on Earth (suppose it did). We couldn't come to know through experience that either of these things happened. So we couldn't come to know through experience that these events had some cause.

The subtler question is whether we can come to know *from* experience that every event must have a cause. We come to know through experience that many things happen. Let us grant for the sake of argument that we also come to know through experience that each of these events has had a cause. Could we not infer from such past experience that the same is true of everything that has happened and will happen?

We certainly could. We might even be justified in doing so. The problem is that this is not what we have taken ourselves to know. We take ourselves to know that every event *must* have a cause, not merely that every event *has* a cause. It would be consistent for every student to be, and yet *possibly not* to be, made anxious by exams. By the same token, it could be true that every event *has* a cause and yet false that every event *must* have a cause. On the face of it, at least, the *must* part is just something we can't know from experience.

So we seem to have found a nontrivial thing we know but can't know empirically. Should this only reaffirm a widely held suspicion that philosophy yields no answers but only more questions, I shall suggest a few possible lines we could take in the face of such cases.

Some (i.e., "empiricists") have concluded that we don't in fact know what we take ourselves to know. In the present case, we don't in fact know that every event *must* have a cause, though we might in fact know from experience that every event *has* a cause. Note that this says nothing about whether it is *true or false* that every event must have a cause. It is still open to these folks to hold that empirical knowledge *doesn't* have a limit, since there is not in fact anything nontrivial we know but can't know empirically. The challenge for this position, however, is to show somehow that we can get along just fine in empirical science and ordinary life without knowing the *must* part.

By contrast, some (i.e., "rationalists") have concluded that there are certain nontrivial things we know through a special way of knowing. So, though we can know from experience that every event *has* a cause, we can know *by some other means* that every event *must* have a cause. By which other means? French philosopher René Descartes spoke of the "divine light" or, more colloquially, "intuition." Prussian philosopher Immanuel Kant spoke of "pure reason," or the capacity to know truths without which experience wouldn't be possible in the first place. For these folks empirical knowledge *does* have a limit. In our

case the limit sits right at the border between the *has* and the *must have*. And the challenge for this position is to somehow convince reasonable skeptics that there is a need for any kind of knowing other than empirical.

Alas, we've come to the end of our excursion into the realm of ideas. If all has gone well, I've whetted your appetite for more armchair undertakings. The debate continues today and shows no clear signs of resolving any time soon. But for those who have had their fill of abstraction, I can sympathize. As far as "palliative remedies" go, Scottish philosopher David Hume recommended backgammon. I'm sure you'll have much better ideas.

Globalisation and the Myth of a Drugs Crisis in Africa

Simukai Chigudu

Introduction

The alarmist rhetoric of the global “war on drugs” shapes contemporary ideas about the drug situation in Africa. Prominent diplomats like the former United States Secretary of State for African Affairs, Johnnie Carson (2009), have posited that drug trafficking will usher in a “tidal wave of addictions, drug-related enterprises, corruption, instability and conflict” overwhelming Africa’s shores. This statement was issued amongst a recent flurry of policy statements, United Nations communiqués, Wikileaks cables, and journalistic accounts all warning of the increasingly grave threat that Africa faces from drug trafficking and abuse. Furthermore, several African countries have declared themselves to be at “crisis point” regarding drugs, which, in some cases, have reached the level of “national disaster” (Carrier & Klantschnig 2012). Yet, these narratives of “crisis” are theoretically and empirically problematic, merging a global securitisation agenda with Western development ideology and corporate interests and thus either ignoring or obfuscating the true scale and impact of harmful drug use on the continent based on solid engagement with local realities.

This essay reviews the recent literature on the “war on drugs” in Africa and seeks to deconstruct the “crisis” discourse to evaluate whether or not this characterisation is justified. To do so, the essay begins with a historical perspective placing drugs in Africa in the *longue durée* of globalised trade and the emergence of politico-legal taxonomies of psychoactive substances. It will then examine current hegemonic thinking about drugs in the Western political imagination and will demonstrate how this relates to Africa especially with regard to security and development. The essay will then go on challenge the key assumptions made about the impact of drugs in Africa and will argue that the “war on drugs” may, in fact, do more harm than good. This argument will allow room to disaggregate the category of drugs and will offer counter-narratives about how certain substances, such as cannabis and khat, may actually provide critical livelihood security. Finally, the essay will conclude by arguing that a more nuanced approach is essential to engage with the challenges and opportunities that drugs present to public health, poverty, political-economic inequality and social life on the continent.

Drugs and Imperialism in Africa: From European Expansion to the “War on Drugs”

The commodification and trade, or “trafficking”, of drugs can be traced as far back as the transoceanic commerce and empire building of the early modern period, from about 1500 to 1789 (Courtwright 2002). Propelled by European overseas expansion, early modern entrepreneurs – merchants, planters and other imperial elites – traded globally in a diverse array of the world’s psychoactive substances ranging from alcohol, caffeine, and tobacco to cannabis, cocaine, heroin, and many other semisynthetic and synthetic substances. Global trade in some substances thrived while in others it was suppressed or ignored based on factors such as shelf life and European cultural biases towards or against particular psychoactive effects (Courtwright 2002). In the African context, where historical records are not as far-reaching, there is evidence of the drug trade, specifically cannabis trafficking, in colonial West Africa during the 1920s and 1930s (Akyeampong 2005). Despite patchy records, it is apparent that the drug trade is deeply embedded in global history thus raising questions of the reasons and origins of more recent moral panic about drugs. Courtwright (2002) offers two overarching factors for considering the change in the political status of drugs. The first, he contends, is that as awareness of the pleasurable and consciousness-altering properties of drugs grew, their use was redirected from the therapeutic realm to that of popular consumption. As such, all large-scale societies began to differentiate in some way between the medical use and the nonmedical abuse of drugs and eventually they made this distinction the moral and legal foundation for the international drug control system (Courtwright 2002: 4). Secondly, he notes the long-standing relationship between drugs and political and economic power with its varied manifestations from the use of drugs to control labour, extract tax revenue or enact penetrating social surveillance.

The strict regulation of drugs as a contemporary phenomenon can be seen as a political and legal strategy of control, based, in part, on moral reasoning. It began apace in the wake of the Second World War to curb a burgeoning illegal trade in psychoactive substances (Carrier & Klantschnig 2012). The signal event in this period was the emergence of the Single Convention on Narcotic Drugs in 1961, which heralded a new wave of international drug policies and institutions oriented around a criminal justice-based approach to control (McAllister 2000). A decade later, Richard Nixon would declare a “total war” on drugs, further directing drug policy towards militaristic and harsh supply-control measures. As this mode of thinking became hegemonic, the term “drug” became increasingly sinister and ever more encompassing of vastly different substances, from cannabis to heroin, irrespective of the pharmacological properties or potential for harm of the individual substances. Meanwhile, other

substances – tobacco and alcohol – as great sources of corporate wealth, were categorised differently, thereby betraying the political, economic and even moral biases of those who formulate the conventions and drug policies (Carrier & Klantschnig 2012).

The expansion of the “war on drugs” to Africa gained political impetus chiefly on the grounds of two ideological agendas: international development and global security. In a foreboding policy-oriented paper, Cockayne and Williams warn of the dangers that drugs pose to Africa’s development and global security:

“[T]he slowly rising tide of drugs and drug money ... will corrupt governments, police and security forces. It will fuel crime, violence and perhaps even drug wars. It will skew ... political econom[ies] to what we describe as ‘junky economies’. It will fuel the spread of HIV/AIDS, exacerbate sexual violence, and encourage prostitution and sex trafficking. And it will fund illegal armed groups in Latin America and create pressures on European relations, immigration policies and law enforcement and military postures” (Cockayne & Williams 2009: 33-34)

In less dystopian terms, the anthropologist, Merrill Singer, describes how drugs can have a negative impact on developing countries, based on his research which focused primarily on Afghanistan, Colombia and the Caribbean. His analysis categorises the deleterious effects of drugs within the following domains: productivity, vulnerable youth, health problems, corruption and the breakdown of social institutions, violence, and environmental degradation (Singer 2008). The application of such an analysis to the African context has a potent intuitive appeal but there is, in fact, little empirical data to support the hypothesis that drugs impede development on the continent. As Carrier and Klantschnig argue:

“The most compelling case for a large-scale negative impact of drugs on development is surely that connected with their smuggling and the connected criminality and corruption. But even here it is unclear whether drugs trade has corrupted states such as Guinea-Bissau, when the criminality and corruption of the state pre-dated Africa's recent absorption into the international drugs trade. Furthermore, any impact that drugs have in impeding development and generating corruption begs the question of whether it is drugs themselves or drug *policy* that is the culprit.” (Carrier & Klantschnig 2012: 57)

Given the limited empirical basis for asserting that drugs undermine development in Africa, how can the force of the “war on drugs” rhetoric be accounted for vis-à-vis the continent? Here, it is contended that the explanation lies, at least partly, in the post-1989 preoccupation with new security threats – such as environmental conflict, emerging epidemics and transnational crime – in the international system (Buzan 2007; Dalby 2007; McInnes & Lee 2012). Through the security paradigm, the African state is “described as being bought by powerful drug cartels, which gain official protection for their business or in even more extreme cases co-opt state acts into active positions within the trade” (Carrier & Klantschnig 2012). For example, utilising evidence from the 1990s in Liberia, Sierra Leone, Congo and Nigeria, Reno (1999) argues that, in these states, politicians and high-level officials deliberately seek involvement in commercial activities – many of them illegal – as a means of clinging on to power. Reno advances the idea that the end of the cold war led to decreasing levels of international aid and foreign political support for African leaders and their domestic patronage systems thus compelling them to turn to new illegal incomes, which have become integral for the rebuilding of political authority in African states.

An argument can be made for the drug “criminalisation” of the state in Nigeria, Guinea-Bissau, and Guinea-Conakry where reports of high-level state involvement in drug trafficking have surfaced (Bayart et al. 2009; Ellis 2009). However, the fear of African countries becoming “narco-states” is strongly inflected by Western security concerns that corrupt states incubate terrorist activity. An International Crisis Group report suggested that “[t]here is a real risk of [Guinea-Bissau] becoming a narco-state and a political and administrative no-man’s-land, attractive to trafficking and terrorist networks in the Maghreb” (2008: 3) while others have claimed al-Qaeda, Hezbollah and the Colombian FARC (Fuerzas Armadas Revolucionarias de Colombia) had representatives in the country to profit from the flourishing drug trade (Vernaschi 2010). However, the scope and applicability of the notion of “narco-states” to Africa more broadly is extremely limited and largely unfounded. Even in the West African examples given, the media narratives linking drug crime to terrorism belie highly complex political situations and ignore the fact that political instability, in Guinea-Bissau for example, might actually make it more difficult for drug entrepreneurs to secure ties with corrupt officials in government. Somewhat ironically, “state weakness” might actually hamper rather than enable large-scale the drug trade (Carrier & Klantschnig 2012).

The “war on drugs” and its link to security ideologies extends its discourse to substances with no addictive narcotic reaction like the plant, khat (World Health Organization 2006). Consumed largely by Muslims from the Arabian

Peninsula and the Horn of Africa, khat has come to be linked, rather dubiously, with the “war on terrorism” in the Western imagination (Anderson & Carrier 2006). Moreover, having been labelled a “drug” in the classification systems of international drug-control institutions, khat has been brought into the “war on drugs” resulting in its stigmatisation and prompting campaigns for its prohibition. Garrison Courtney, a spokesman for the American Drug Enforcement Agency, captures this way of thinking when of he said of khat and its users:

“It is the same drug used by young kids who go out and shoot people in Africa, Iraq and Afghanistan. It is something that gives you a heightened sense of invincibility, and when you look at those effects, you could take out the word ‘khat’ and put in ‘heroin’ or ‘cocaine’.” (Quoted in Dizikes 2009).

Such facile comparisons linking khat consumption with cocaine “further assimilate what is essentially a mild social stimulant into a category of very different substances, ignoring the great differences between their respective effects and cultures of consumption”. (Anderson & Carrier 2006: 163).

Thus far, this essay has argued that portraying the drug situation in Africa, as a “crisis” is an eminently political discourse, which is both theoretically and empirically problematic. The diverse experiences of different countries on the continent, the highly protean nature of the term “drug”, and the lack of evidence causally linking drug trafficking and use to any large-scale social, political or economic challenges in the vast majority of the continent attest to this. The essay will now change focus and will argue that framing the drug situation in Africa as a “crisis” is not only too simplistic but is actually harmful for three principal reasons: i) it gives impetus to draconian drug-control measures, particularly on the supply side; ii) it obscures the underlying causes and true negative impact of drug consumption, especially for the poorest and most vulnerable; and iii) it ignores some of the social and economic benefits of drugs, particularly those that are cash crops.

Drugs in Africa: Re-considering the Source and Locus of Threat

African states that have shown a willingness to control the cultivation, trade and consumption of illegal drugs have often implemented repressive policies. Repression typically takes on the form of police or military-driven policy to contain the production, trade and use of drugs by force, which usually comes at the cost of people’s human rights (Carrier & Klantschnig 2012).

Nigeria has one of the longest experiences of drug law enforcement in West Africa, with a specialised agency – the Nigerian Drug Law Enforcement Agency (NDLEA) - founded in 1989. In terms of drug control methods, the Nigerian government, through the NDLEA, has adopted a centralised and exclusive framework prioritising the repressive dimension of crime control. Klantsching (2009), having conducted empirical research on the NDLEA, reports that “[t]he most apparent, and within drug enforcement circles celebrated, repressive policies have been the execution of drug smugglers in the mid-1980s, and large-scale cannabis eradication schemes since the 1990s”. In particular, he notes that the most common and most repressive drug law enforcement activities are anti-cannabis operations. These expanded immensely since 1994, so that cannabis seizures and arrests today account for most of the investigation activity of the NDLEA (Klantschnig 2009). The NDLEA uses violent methods in its anti-cannabis activities resulting in a high number of drug control-related deaths. The main reason for the violence of such operations is their intrusiveness in rural communities where the agency uses coercive methods of detection, confiscation, arrest and destruction of farmland causing severe harm and resulting in much local community (Klantschnig 2009). In this way, a significant portion of the agency’s work justifies the name “war on drugs”.

In addition to the repressive nature of state drug control in Nigeria, the sidelining of alternative actors in the drug control framework – including those from the medical, non-governmental and academic communities – closes avenues for many substances users to seek needed medical treatment and rehabilitation. Across Africa more widely, Tanzania remains exceptional in implementing more medically oriented drug policy including harm reduction strategies (Carrier & Klantschnig 2012). There is, however, a great need for medical treatment and social safety nets for substances users in Africa as Beckerleg and Hundt highlight starkly through an ethnographic study of drug use in the Kenyan coastal resort town of Malindi:

“Women heroin users in Malindi suffer from physical violence and imprisonment, rely on sex work for incomes, are stigmatised by their way of life, and suffer ill health. They are victims of structural violence ... By revealing structural violence [in such] ethnographic work ... anthropologists makes an important contribution to drugs research. The main value of such work must be to provide insights into the lives and suffering of disadvantaged groups such as sex workers and drug users, but also to press for policy change in the treatment services provided for drug users and in the legislation regarding possession and dealing in illicit substances.” (Beckerleg & Hundt 2005)

The “war on drugs” does further harm in its inconsistency. While demanding that urgent action is taken to control the production, trafficking and use of certain types of psychoactive substances, it turns a blind eye to others – notably tobacco and alcohol – despite the fact that “tobacco kills about half of the people who use it” while alcohol has been “identified as a cause of more than 60 types of disease and injury” (Stuckler et al. 2011: 12-13). The key argument here is that the interests of powerful actors often privilege particular ideas about what is and what is not a “drug”, how it ought to be controlled and therefore what constitutes a “crisis”. These framings are not neutral or objective. In as much as security concerns raise alarm about the dangers of illicit substances in Africa, the tobacco and alcohol industries actors downplay the risks posed by licit substances using tactics such as influencing legislation, arranging authorship of scientific papers, and arguing that corporate products create jobs for farmers in developing countries (Wiist 2011). The commonality in these framings is that Western parochial concerns are privileged over African interests.

To present a counter-narrative about drugs in Africa beyond the prism of harm, a number of scholars have called attention to the benefits of “drug” crops, particularly khat and cannabis. The great demand that exists for these crops actually creates economic opportunities for a number of small-scale traders, farmers and transporters and, in some cases, they can actually secure livelihoods from impoverishment (Carrier & Klantschnig 2012). In this respect, Beckerleg (2010: 182) goes as far as arguing that:

“Khat is subversive because in East Africa it has improved the lives of millions of poor people who are not part of development programs. Khat, I contend, renders ‘development’ irrelevant to the lives and livelihoods of independent-minded producers and entrepreneurs.”

Adding further perspectives on “drug” consumption, Laniel argues for the functional use of cannabis throughout much of Africa pointing out that its “users frequently report that it enables them to work harder at physically demanding jobs” (Quoted in Carrier & Klantschnig 2012: 36); while Weir (Weir 1985) argues that khat parties provide a forum for strengthening mutual support networks and sharing business opportunities.

Conclusion

This essay has argued that the “war of drugs” and its rhetoric on a drug “crisis” in Africa has been driven much more by Western ideological, political and

corporate interests rather than local African realities. In a vast continent with very diverse experiences, sensationalising the drug situation in Africa is patently counterproductive in trying to address the real problems surrounding the production, trade and use of drugs. Furthermore, drug control measures that concentrate on the supply side have led to repressive policies, increased corruption and violations of human rights; have failed to examine the underlying structural and global political-economic factors that foster drug trafficking; and have sidelined medically and socially oriented drug policies for substance users in need across much of the continent. Finally, this essay concludes that the drug situation in Africa does not merit its portrayal as a “crisis” and that what is required is a much more holistic and nuanced political, theoretical and empirical appraisal of drugs in Africa to address genuine security, development, health and social concerns.

The Meritocracy Strikes Back

Edward Hicks

Two recent events – the Oxford University referendum on whether to abolish sub fusc from examinations (which was rejected) and the UK General Election – have brought into sharp focus the issue of ‘Oxbridge’ in public life. Most obviously the internal referendum saw arguments mustered for and against the continuation of this ‘traditional’ or ‘archaic’ garb based around whether it did or did not harmfully reinforce an ‘elitist’ view of Oxford, and either acted as a deterrent or an appeal, an excluder or an equaliser, for potential applicants and current students from poor backgrounds. Yet the General Election also highlighted the hegemony of Oxbridge over public life. Cameron, Miliband and Clegg all attended Oxford or Cambridge. Equally striking was the comment of the victorious Australian Conservative election strategist Lynton Crosby. Condemning the commentators who wrongly predicted the outcome of the general election, Crosby scornfully remarked:

‘Most went to Oxbridge, talk only to themselves, and the last time they met a punter was when they picked up their dry cleaning.’¹

What struck me is that pejorative use of ‘Oxbridge’-- it is not uncommon. This portmanteau term is as often used for abuse as for describing two of Britain’s (and the world’s) oldest and most prestigious universities. A third event that helps to focus my article is the release of information on the school backgrounds of students admitted to Oxford and Cambridge in 2014.² My chief focus shall be on the undergraduate admissions system – partly because this is so often the battleground for allegations (on both sides) of bias for and against state school students.³

A Long-Running Debate

The vexatious charge of ‘elitism’ is in one sense nothing new. Tom Brown, in the sequel work *Tom Brown at Oxford*, is compelled to concur with his friend Hardy ‘that the worship of the golden calf was verily and indeed rampant in Oxford.’ Strikingly however the ideal of an alternative already existed: ‘why [Brown opines on one occasion], Oxford ought to be *the* place in England where money should count for nothing.’⁴ A century later, accusations that Oxford was remote and tacitly exclusionary (famously articulated in *Jude the Obscure*) and that an inferiority complex deterred even grammar school students from applying can be found in the pages of *The Guardian*, for whom Oxbridge seems a *bête noire*. Indeed, one apt sentence that still applies today,

is ‘The survey found that students from maintained schools are under-represented at Oxbridge, not because of dons’ bias, but because they do not apply.’⁵ So this is not a new debate,⁶ but one worth re-examining.

The first point that ought to be made is that Oxbridge arguably has improved over the last fifty years, albeit at a slow rate. In 1955 the Kelsall Report tabulated⁷ the number of British students at British universities to be as follows:

<i>School Type</i>	Cambridge	Oxford	Rest
H.M.C Independent ⁸	53	42	12
Direct Grant Grammar Schools ⁹	12	13	14
Local Education Authority Grammar Schools	27	39	68
Others (mainly Independent Schools)	7	7	6

Thus at minimum (assuming implausibly that all the direct grant grammar school students were originally from state-schools) Cambridge admitted 60% of its intake from private schools, and Oxford 49%.¹⁰ The situation where a majority of students came from private schools (and particularly from a small number of public schools) has now ended. The 2014 data showed 62.2% of students admitted to Cambridge were from state schools and 56.3% at Oxford.¹¹ Nonetheless the charge is that this is grossly disproportionate to the 7% of children who attended private schools as a whole. I shall begin by explaining the UK university admission and then the Oxbridge admissions process; address the chief criticisms of the system by suggesting the fixation on this 7% figure is a misleading criteria for judging admissions, and that interviews are not the rocket booster for privilege they are often asserted to be; offer some thoughts on proposed radical changes to the situation, and outline my thoughts on where the chief problems lie.

The Admissions Systems

To properly evaluate the fairness of Oxford and Cambridge’s admissions system, we ought to begin by considering how admissions work to UK universities in general and Oxbridge in particular. When a pupil is applying to a UK university (normally in their final year at secondary school) they will submit a UCAS personal statement, accompanied with references from their school and details of both their past examination grades and predicted grades

in forthcoming examinations (in England and Wales A-Levels). They can apply to five universities in total, including possibly Oxford or Cambridge but not both. Universities have discretion over other requirements – the grades they require of their students, the submission of written work, the undertaking of entrance examinations, and the obligation of interviews. The latter are not exclusive to Oxbridge, but they are only institutionalised and famous at Oxbridge. So to gain entry at Oxbridge you have to undertake A-Level examinations (or equivalents such as the International Baccalaureate or in Scotland Highers); you have to have practical expectation of obtaining at least 3As at A-Level, or greater in science subjects (especially at Cambridge); you then have to apply at an earlier date than other UCAS applications, submitting your personal statement and accoutrements; you must do all this before you enter the idiosyncratic Oxbridge entrance system.

Let us next briefly sketch the Oxbridge undergraduate admissions system. Applicants put in their application earlier than for other Universities. This is often followed by an aptitude test – such as the History Aptitude Test (HAT) or English Literature Aptitude Test (ELAT) – which focuses on obscure topics hitherto unstudied by school children (such as blood feuds in Viking Iceland or women in early 20th century Korea) to challenge an applicant's ability with unfamiliar material. This aptitude test is used, alongside the personal statement, references from teachers and their exam record to decide whether to shortlist the candidate for interview. The exam record includes contextualised GCSE results which are adjusted according to the GCSE performance of their school. Thus a higher score is awarded for someone with 10A*s if they are the only pupil in their school to have obtained any A*s than someone where the majority of pupils had done so. A flagging system is also used to identify 'access' candidates with disadvantageous backgrounds from schools with poor examination records. Candidates will have chosen a college and, normally, though not universally, that is where they are interviewed. Certain subjects, such as history, also have written work submitted and marked. At the end of December, after the conclusion of Michaelmas term, Oxbridge is flooded with applicants over a fortnight. Generally candidates are guaranteed at least two interviews at one college and in the sciences often have a guaranteed third interview elsewhere. At Oxford, after two days of interviews candidates are divided into four categories – definite choices which the college secure; very able candidates but who, owing to restrictions on the number of candidates any one college can reserve, are still available for other colleges to interview if they wish; candidates whose performance may not be stellar but whom it is thought worthwhile to give them another opportunity to be interviewed by a different college; and candidates who will be sent home.¹² So in my case, my original two interviews were at Magdalen, and on the third day I was interviewed again at St Peter's and St Anne's, ending up at the latter. Candidates are invariably

given a grade target they have to meet if they have not already taken their A Levels. Oxford are more inclined, especially in the humanities, to ask for 3As at A Level (or an equivalent); Cambridge incline towards including A*s grades in their offer. If a student meets the requirements of the offer, he or she is admitted. This then is the process candidates have to traverse if they are to gain admittance. Let us now turn to criticisms of this process and its outcome.

Admissions under Fire

Criticism invariably starts by noting the disparity between the 7% of private schools students as a percentage of the overall school population and their much higher proportion at Oxbridge. But it is worth asking if this is a fair comparison. On the one hand you have the entire school system of the United Kingdom, including all pupils of all abilities from the age of five to eighteen, a system you are legally obliged to attend, paid for by taxation, with none or (after sixteen) very few academic barriers to continuation, and an admission system predominantly decided by where you live relative to the school. On the other hand you have universities – which a minority of an age cohort will attend; where (excepting for Scottish students in Scotland) tuition fees are charged; where entry is dependent on having undertaken sixth form examinations such as A-Levels; where universities can choose whether to admit you; where your application is normally only with predicted final grades (which are often under-estimates of eventual performance),¹³ and admission dependent on achieving those specified grades. You can be a 3 A* candidate and potentially end up with no offers whatsoever.¹⁴

There are other problems with this comparison. First, to have any chance of going to university you have to stay at secondary school into sixth form. Looking at the Department of Education's data on school numbers in England for 2014,¹⁵ it is notable that the percentage of private school students as a total of the overall numbers leaps at ages sixteen to eighteen, making a leap from 8% of 11 to 15 year old pupils to 15% of sixteen-year-olds, 17% of seventeen-year-olds and 23% of eighteen-year-olds.¹⁶ Similarly, if we look at A-Level results 29.3% of independent school students obtained 3A*-A grades or better at A-Level and 42.6% achieved AAB or better in 2013-4, compared to 10.3% and 17.4% of state school students.¹⁷ Thus, private school students make up a disproportionately large part of the pool of high-performing pupils likely to apply and be admitted into Oxbridge. It is worth noting this disproportionality is a wider trend. If we look at the percentage of state school students at universities in general, four institutions perform worse than Oxford, two more (Bristol and St Andrew) worse than Cambridge, twenty four had under 80% state school intake, and sixty eight under the 93% number needed to make them representative of the school system. That twenty four included Warwick,

Exeter, Durham, UCL, KCL, LSE, Edinburgh, Newcastle, Bath and Oxford Brookes.¹⁸ Therefore focusing on Oxbridge partly obscures a wider problem that while access to universities as a whole has increased considerably over the last two decades, access has not increased to those universities asking for the highest A Level (or equivalent) grades.

The main criticism of the Oxbridge admissions system tends to focus on the interview system. This is partly because it is the most idiosyncratic element. The arguments raised against it largely fixate on its supposed unfairness towards better prepared private school pupils who bedazzle the academics. This has always struck me as a strange target of execration – and I have participated in it, abetted as an undergraduate interviewee helper, and helped with the administrative side of history interviews last year. After all, while not the norm, interviews are certainly not unheard of in other universities. For example I was also interviewed at King's College London. Interviews are also the norm in the workplace without ever being subject to similar opprobrium. The notion that interviews actually improve social mobility in access to universities was one posited by former Labour Minister Alan Milburn in 2012.¹⁹ Another feature of the interview is that it mirrors the tutorial system used at Oxbridge as the main method of teaching. Flourishing in the interview suggests adeptness for the tutorial system. Additionally, the premise that academics are both susceptible to manipulation and bedazzlement, and somehow would not have higher expectations of private school students if they have received greater preparations and accordingly adjust their judgements of the candidates would seem flawed.

So why does Alan Milburn endorse interviews as a way to improve social mobility? Partly because they add another layer to the application and an opportunity for students who might not have stellar personal statements or perfect examination results to demonstrate their aptitude and potential. To see why this is a plausible interpretation we need to divest ourselves of the encrustations of myths which have obscured its real nature. The goal of the interview is not to test knowledge – where a pin-point elocutionary masterpiece might indeed prevail – but to evaluate candidate's ability to adapt to previously unseen material. So to take the example of history – the interviews tend to involve candidates reading an academic article in advance of the interview and then being questioned on it. This approach is even more commonly employed in subjects where candidates may not have studied them at school (such as law) or in the sciences. The interview also affords an opportunity to challenge claims made in the personal statement (what did you think of the argument in this book you state you have read?) and the written work they may have submitted in a manner which presages the tutorial discussion of an essay.

Nevertheless it is worth also bearing in mind that, aside from having at least two interviews and therefore a chance to overcome pre-existing nerves which all candidates, however well-prepared, will have, interviews are but one part of the overall application system. Your prior and predicted grades are important factors in deciding whether you are shortlisted, and especially for borderline cases the quality of the submitted written work, the presence of an access flag, and performance in the aptitude test all come into play. As an investigation by *The Guardian* discovered, and I can equally testify having sat in the room where the decisions over candidates are being made, the decision process is thorough, rigorous and fair-minded.²⁰

Ideas for Reform

As with institutional reform of many types, such as the House of Lords, there is no shortage of ideas for how to radically change the situation. These range from having quotas (in effect the proposal of Simon Hughes in 2011),²¹ to establishing state school only colleges,²² or by admitting students with grades lower than the normal 3As because of the school they attend/their background/they qualified for free school meals etc.

It is worth considering these ideas. In one sense these approaches are an over-reaction, not because the disproportionality is irrelevant, but because there is no evidence that simply having more state school students apply will not increase the number of state school students admitted. Were there a huge disparity between applications and admissions then further action might be justified. But in this case the proposals all represent a major divergence from the existing premises of the admissions system – that instead of searching for the best candidate regardless of background the admission system should aim, perhaps artificially, at creating a ‘representative’ intake.

With regards to quotas the issue would seem to be this – if the admissions system is actively discriminative against state school students then evidence should be produced to demonstrate this; if it is not then the reason for the disparity either lies in a lack of applicants and increasing this would liquidate the need for quotas, or if there is a lack of 3A grade state school students who would otherwise get in then a quota would let in academically inferior candidates in the pursuit of social engineering. I suspect the situation is the former, and rather than employ a discriminatory quota system increasing applications would be preferable. It removes the impression of tokenism and it ensures an even application system where you aren’t disadvantaged on account of which school you went to.²³

A counter-argument put up is to claim that state school students generally do better at university than private school students, because once placed on an even playing-field their greater potential shines through which hitherto has been suppressed by a lack of resources and facilities. Intuitively this claim has much to commend it. More recently academic research has appeared to lend weight to this claim.²⁴ But this research needs to be used cautiously. It lends justification to Oxbridge's employment of weighted GCSE results and access flags on applications – so this idea is already a part of the admissions system. However the recent Higher Education Funding Council study referenced below contained some striking omissions. First they excluded medicine and dentistry students and what they termed 'high-performing independent schools' because the latter 'could have a confounding effect on our conclusions about school type.' It isn't clear whether other modelling approaches including these schools were tried and produced different outcomes.²⁵ More significantly research showed that while pupils who had attended the top 20% of schools or who had attended independent schools and obtained say ABB, BBB or BBC grades at A Level were notably less likely to gain a 2:1, but the same could not be said for those pupils achieving 3As.²⁶ Therefore if a university's standard offer were 3Bs at A Level then there would be clear evidence for expecting *on average* that state school pupils would out-perform private school students or students from the top 20% of schools would be out-performed by the remaining 80% (though this does not mean pupils from the worst 20% of schools will out-perform everyone else). However it is less clear this applies for students with 3As or better. Indeed Cambridge University's research on their students in 2005-10 found there was 'no obvious evidence that students from any educational background under- or out-perform their peers from other parts of the UK secondary education sector at Cambridge.' Among erstwhile comprehensive school students 83.6% gained a First or 2:1; 84.0% of former independent school students did likewise; compared to 84.6% of previously grammar school educated students and 82.8% of hitherto 'other state' students.²⁷

There are two obvious reasons for this. On the one hand these maybe the ablest students in whichever school in terms of aptitude and application and thus most likely to flourish thereafter. On the other, the restraints both of a formulaic examination marking scheme designed for a wider range of academic abilities and the ceiling imposed by having reached the top grades and obtained the maximum marks may have concealed their considerable potential. This is not to condemn the Oxbridge's use of access flags or contextual GCSE results, but it does undermine the claim that students with grades below three As ought to be admitted on the grounds of their greater potential. Research has tended to compare students with the same A Level grades, not those at the same institution with differing A Level grades, so this claim has no empirical

grounding and is weakened (for the highest performing universities) by existing empirical evidence of the type just examined. Additionally given the very high application failure rate among very able students of whatever background and schooling who subsequently obtain 3As at A Level or better, and some of whom later attend Oxbridge for post-graduate study, it would seem ludicrously unfair to entirely pass over all of them in favour of candidates who have not even reached that level. Indeed it might merely cause higher drop-out rates in certain subjects. If you have not mastered basic integration in mathematics then more complex integration is going to prove a struggle in the high-pressured, fast-working environment of a major British University, such as Oxford or Cambridge.

As with the idea of state school only colleges there is something inherent patronising about the suggestion pupils can only gain admission with lower grades or other special arrangements – not to mention unjust to schools such as the Mossbourne Academy in Hackney which have raised standards. Further issues additional research would need to address is that comparing students at the same institution who have already gained admission is not the same thing as comparing pupils prior to admission (where their ‘potentiality’ may be difficult to judge). Existing research is therefore of limited use in telling us what the opportunity cost of admitting one student over another will be, and in any case merely seems to suggest measures other than A Level should be more extensively used in deciding on admissions, something Oxbridge already do.²⁸

As for the idea of state school only colleges, this entire argument rests on an assumption – that state school students today are equivalent to women in the late 19th century. But the majority of British Oxbridge students are from state schools, whereas when women-only colleges were initially established no other colleges would admit them. Leaving aside the controversial nature of women-only colleges, which have already ceased to exist in Oxford and are declining in Cambridge; leaving aside also the question of where these new colleges will be built – consider how damaging would be the notion of an effectively segregated University. If one of the justifications for increasing state school intake is to encourage a more diverse student society this idea would seem to counter-act and undermine this goal. Thus I think it would be fair to conclude many of these ‘radical’ ideas are either unnecessary or highly flawed to the point of being counter-productive.

The Root of the Problem

What then explains the massive disparity between the percentages of state school students in general and state school students at Oxbridge? One obvious explanation is lower examination results among state school pupils. However

there is an even greater problem: pupils don't apply. Among UK-only applicants (a point I shall discuss later) 60% of applicants to Oxford in 2014 came from state schools.²⁹ Why are the rates of application so low? There are various explanations why people might not apply to Oxbridge even if they have the high grades needed to be competitive in the admissions process. A wish to study close to home; or (if in Scotland) free from the burden of tuition fees; or the cheaper living costs of living at home and commuting to a university as is common in London; or believing another institution is better at the subject you wish to study; or a wish to study a subject not offered at Oxford or Cambridge; or wishing to follow friends to a particular institution – all are plausible and uncontentious reasons. Perhaps a degree of pessimism about their likelihood of succeeding might also act as a deterrent. However the crucial controversial issue is whether the image of Oxbridge – of its Hogwarts-style building and garb and supposed 'elitism', toff-dominated intake – is a major factor. As we have seen the majority of UK students at Oxbridge are from state schools. This does not conform to the stereotypical image – and alas the image seems powerfully influential among teachers. Two surveys by the Sutton Trust in 2012 and 2014 revealed a worrying picture. In 2012 only 44% of teachers surveyed said they would advise academically-gifted pupils to apply to Oxbridge. Asked how many state school students were admitted to Oxbridge (that year 57%) only 7% thought it was over half, and almost two thirds thought it was under 30%.³⁰ In 2014 the figures had improved – the former creeping up to 47% of teachers who would always or usually advise pupils to apply, and 9% estimating a majority for state school pupils at Oxbridge (along with a high 29% don't know figure).³¹ Nevertheless it seems plausible many talented state school pupils are being deterred from applying by their teachers, possibly because those teachers have a mistaken understanding of the demography of Oxbridge.

The main counter-argument to the admissions claim is to argue there is a fall in state school students throughout the process. They make up 60% of applicants to Oxford in 2014, 57% that were shortlisted for interview, 56% of offers and 55% of acceptances.³² However this trend (and statistics) relies on excluding international students. With non-UK domiciles included the trend reverses – 41% of applications to Oxford; 43% of those shortlisted, and 46% of the offers and acceptances.³³ Then there is the argument that the acceptance rate for state schools is lower than for independent schools (21% compared to 25% in 2014). Again comparison with international students is instructive – the acceptance rate for overseas schools is 11%. Moreover to even these acceptance rates you would only need 133 (out of 3161 acceptances) more state school pupils in place of independent school pupils. Furthermore the discrepancy can also be explained by poor advice given to state school students over which A Levels to undertake, which can weaken their applications, especially in the sciences

where specific scientific A Level subjects are prerequisites for further study,³⁴ and by state students applying for the most popular subjects such as law and medicine. Evidently the more applicants per place, the less opportunity you have of gaining a place compared to someone applying for a less popular subject, such as classics.³⁵

Another counter-argument is that Oxbridge contributes to deterring disadvantaged students in two ways – a lack of access efforts and through its ‘archaic’ image with its historic buildings and rituals. Here we can truly get to the root of the problem. After all, teachers’ mistaken impressions about Oxbridge student numbers have to be shaped by something. As far as access is concerned, both the university and colleges, students and staff, put in considerable efforts – organising tours of colleges; running a highly effective Summer School targeted at schools with low rates of Oxbridge admissions; offering bursaries; visiting schools and providing mentoring assistance for potential applicants.³⁶ Oxford University in 2015-6 will spend, according to its agreement with the Office for Fair Access, £5.67 million on outreach programmes, along with £10.89 million in bursaries and tuition fee reductions.³⁷ As far as ritual goes, as the recent sub-fusc referendum showed, such traditional wear and institutions (such as formal hall) can be construed positively, as reasons *to* apply. The assumption that applicants only want something similar to their previous experiences, and don’t have their imaginations fired by the Hogwarts-style buildings and clothing; or are unable to look beyond such exteriors to consider the people within and judge an institution on that fairer, more substantial basis, is, I would suggest, highly flawed. Moreover there is an egalitarian element to such rituals – all wear sub-fusc for example. Equally the low prices of formal hall render it a far more accessible ritual than academic writing on the subject or a superficial impression might suggest.³⁸

Academics have not helped improve our understanding of this debate. There is disappointingly little research done into the Oxbridge admissions itself, though that which has been done is quite positive in its assessment.³⁹ Conversely the most recent work deliberately seemed to eschew addressing the validity of the arguments presented by the Oxford students they interviewed. Although the very title and the tone of the article suggest the authors disagreed with many of the opinions uttered, they never made an attempt to rebut the chief claim that numbers of applicants was the core explanation.⁴⁰

Their assumptions, and the mistaken view of teachers, are largely, I suggest, attributable to the stereotypical portrayal of Oxbridge in the press. The chief guilty party is *The Guardian* newspaper, whose website retains a permanent ‘Oxbridge and elitism’ section. Readers will have noticed many of the articles

hostile to Oxbridge cited in this piece originate in this newspaper, sometimes written by Oxbridge graduates. Such a catalogue of calumny has certainly not been helpful in encouraging applications. Indeed if a Cambridge Junior Research Fellow, writing in their pages, condones state school students not applying, they merely reinforce the problem they purport to wish to tackle.⁴¹ Certainly such a catalogue is not in the public interest – and a newspaper quick to cite the public interest defence to defend publication of illegally obtained material can be hoisted on their own petard by the query: if something is not in the public interest as you yourself define it, how can its lawfulness be an excuse for its publication? It would be hard for *The Guardian* to claim they think the status quo is in the public interest, thus their articles in reinforcing this run contrary to the public interest and therefore are harmful and inexcusable. Yet whilst *The Guardian* is the chief culprit they merely strengthen a public image which has grown up through books, films and television shows such as *Brideshead Revisited*, *The Riot Club*, and even *Lewis*. Notably these are all fictional publications, in the former case depicting an inter-war Oxford literally decades away from the modern city. Rarely do journalists actually bother to interview students or visit institutions – much easier to sit in an office turning out pap and publish it with a photograph of an appropriately ‘archaic’ building such as the Radcliffe Camera or King’s College Chapel. The irony of this media pandering is their complaints become self-fulfilling prophecies because they do nothing to dispel misconceptions – despite an almost universal commitment across the political spectrum in favour of greater social mobility.

Let me conclude with humility. Oxford and Cambridge are excellent institutions, though far from uniquely excellent institutions within the United Kingdom. Their admissions systems are rigorous and, as I have strenuously contended, fair for those who apply. But such systems are not infallible, nor are their participants. The great battle to widen participation both at Oxbridge and more widely, to universities in general, must ultimately be fought prior to university when would-be students are still babes in arms or pupils in the classroom. Nonetheless, if that great principle of academic excellence is to be retained with a truly meritocratic system of admissions then the encouragement of applicants from suitable candidates is vital. At the heart of this effort can undoubtedly be the students themselves, including those of St Anne’s College.

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¹ *The Daily Telegraph*, 16th May 2015, No. 49,757, p. 1.

² *BBC News Website*, 29th May 2015, ‘Cambridge sees slight rise in state school students’ <http://www.bbc.co.uk/news/education-32922699>

³ *The Guardian* has a whole section devoted to ‘Oxbridge and Elitism’ on its website. However such accusations are found in other newspapers – in 2013 Anthony Seldon

alleged there was bias against public school pupils (*Daily Telegraph*, 26th January 2013 ‘Bias against public school pupils is ‘hatred that dare not speak its name’

<http://www.telegraph.co.uk/education/educationnews/9827691/Bias-against-public-school-pupils-is-hatred-that-dare-not-speak-its-name.html>) while a year later the same newspaper carried accusations of bias against state school pupils (*Daily Telegraph*, 8th March 2014, ‘Oxbridge have a state school blind spot’
<http://www.telegraph.co.uk/education/universityeducation/10683471/Oxbridge-have-a-state-school-blind-spot.html>

⁴ T. Hughes, *Tom Brown at Oxford*, (London, 1864), pp. 66, 58.

⁵ *The Guardian*, 23rd October 1964, ‘Oxford ‘must sell itself to schools’’, p. 4; 20th May 1966, ‘Sixth-formers with inferiority complex over Oxbridge’, p. 6.

⁶ A more academic view was put forward by M. Brock, ‘Admissions: An Oxford View’, *Higher Education Quarterly* (1965), 19.3, pp. 259-66.

⁷ Cited in *The Guardian*, 19th April 1960, ‘Time for an Oxbridge reappraisal’, p. 4.

⁸ These are Independent Schools in the Headmasters Conferences broadly the ‘public schools’

⁹ These were independent grammar schools (including some of England’s oldest grammar schools such as Kingston Grammar School and Manchester Grammar School both dating from Tudor times) which received government funds in return for admitting a minimum of 25% of their students for free from state primary schools. They largely ceased to exist after the 1970s when they were obliged to become comprehensives in return for a continuation of state funds. Most instead chose to become independent schools

¹⁰ Complicating this debate is how one defines the direct grant grammar school. Including them as state schools means private school entry was below 40% in the 1970s and then leapt to over 50% at the beginning of the 1980s. F. Green, S. Machin, R. Murphy and Y. Zhu, ‘The Changing Economic Advantages from Private Schools’, *Economica* (2011), 79, p. 663.

¹¹ BBC News Website, 29th May 2015, ‘Cambridge sees slight rise in state school students’
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¹² At Cambridge borderline candidates are putting into a ‘pool’ and maybe chosen without another interview or after an interview in the New Year.

¹³ *The Daily Telegraph*, 22nd October 2013, ‘Exam chiefs: most predicted A-Level grades are wrong’, <http://www.telegraph.co.uk/education/educationnews/10397499/Exam-chiefs-most-predicted-A-level-grades-are-wrong.html>

¹⁴ Oxford and Cambridge do not participate in, but many other Universities do, in the ‘clearing’ process where, after the release of examination results students can apply to Universities on an informal basis

¹⁵ Found at <https://www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2014>

¹⁶ <https://www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2014>

¹⁷ <https://www.gov.uk/government/statistics/a-level-and-other-level-3-results-2013-to-2014-revised>

¹⁸ https://www.hesa.ac.uk/index.php?option=com_content&view=article&id=1897&Itemid=239#pi

¹⁹ *BBC News Website*, ‘Unis ‘should offer poor pupils automatic interview’’, 18th October 2012, <http://www.bbc.co.uk/news/education-19990211>

²⁰ <http://www.theguardian.com/education/2012/jan/10/how-cambridge-admissions-really-work>

²¹ <http://www.theguardian.com/politics/2011/jan/07/universities-intake-simon-hughes>

²² <http://www.theguardian.com/commentisfree/2014/nov/24/oxford-cambridge-colleges-exclusively-state-school-pupils?commentpage=1#comment-44107723>

²³ It appears even Simon Hughes fellow Liberal Democrats were critical of his idea: <http://www.libdemvoice.org/fix-our-school-system-and-stop-unibashing-22725.html>

²⁴ See for example *Differences in degree outcomes: Key findings*, March 2014.

https://www.hefce.ac.uk/media/hefce/content/pubs/2014/201403/HEFCE2014_03.pdf

²⁵ *Ibid*, pp. 48, 50.

²⁶ *Ibid*, pp. 13-4, 16.

²⁷ http://www.cao.cam.ac.uk/sites/www.cao.cam.ac.uk/files/ar_gp_school_performance.pdf

²⁸ There is also a broader point about A Levels. If it is possible to 'adjust' for background, school performance, potential etc then why do the advocates of such an approach not suggest its use at a national level to produce national examination results? After all if it is good enough for University admissions surely it is good enough for the nation as a whole?

²⁹ http://public.tableau.com/views/UoO_UG_Admissions2/StagesofSelection?%3AshowVizHome=no#2

³⁰ <http://www.suttontrust.com/newsarchive/less-half-state-teachers-advise-able-pupils-apply-oxbridge/>

³¹ <http://www.suttontrust.com/newsarchive/summer-schools-aim-dispel-state-school-teachers-oxbridge-misconceptions/>

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³³ http://public.tableau.com/views/UoO_UG_Admissions2/StagesofSelection?%3AshowVizHome=no#2

³⁴ <http://www.theguardian.com/education/2015/mar/17/poor-bright-pupils-aged-11-fall-behind-by-a-levels-study-finds>

³⁵ http://public.tableau.com/views/UoO_UG_Admissions2/AcceptanceRate?%3AshowVizHome=no#2

³⁶ 'Oxford entry more transparent, says outgoing admissions head', *BBC News Website*, 22nd September 2014, <http://www.bbc.co.uk/news/education-29222233>

³⁷ 'University of Oxford Agreement with the Office for Fair Access 2015-6', p. 4. <http://www.offa.org.uk/agreements/University%20of%20Oxford.pdf>

³⁸ M. Domencio and N. Phillips, 'Sustaining the Ivory Tower: Oxbridge Formal Dining as Organizational Ritual', *Journal of Management Inquiry* (2009), 18.4, pp. 326-43.

³⁹ R. Nahai, 'Is meritocracy fair? A qualitative case study of admissions at the University of Oxford', *Oxford Review of Education* (2013), 39.5, pp. 681-701. Similarly supportive of the argument that a lack of applicants is an important explanatory factor for the outcomes of the UK university admission system is: M. Skinner & P. Noden, 'Why are you applying there?': 'race', class and the construction of higher education 'choice' in the United Kingdom', *British Journal of Sociology of Education* (2014), pp. 1-22.

⁴⁰ N. Warikoo and C. Fuhr, 'Legitimizing status: perceptions of meritocracy and inequality among undergraduates at an elite British university', *British Educational Research Journal* (2014), 40.4, pp. 699-717.

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