

Chapter One Darwin's Chorus

The view from the tower

Few places on earth can provide so abundant a set of connections to every aspect of human achievement as the City of Oxford. Certainly, nowhere else reveals such rich associations with the key figures whose legacy resounds in the argument of this book. The debate about the role of music in the origins of our species requires us to confront the issue of why it appears so strange to think of mankind as a musical animal. Oxford, with its churches, chapels and Cathedral, has for centuries represented the belief that God made man to sing His praises. But, in the role of the University in the development of scientific method and its philosophical consequences, it has also provided a haven for those whose work has, openly or not, challenged this tradition. For eight hundred years the city has been a centre for the generation, preservation and examination of beliefs, where the most radical speculations could stir amidst the weight of antiquity. The tools we shall employ to analyse the phenomenon of song and its role in our development, have been forged by thinkers and institutions throughout the world. But wherever new horizons have been glimpsed, the presses and common rooms of Oxford have been quick to respond.

I suggest we take a walk around this historic city before embarking on subsequent investigations. We will encounter places where beliefs and conscience have been tested, sometimes on pain of death, and where flights of imagination have taken the minds of readers and listeners well beyond the confines of the city, their own time, and reality as they knew it. We can illustrate some of the principal movements associated with buildings and people whose influence has defined the history of ideas to which this book seeks to contribute. The stones, the decorations, and the artefacts of Oxford speak eloquently of the continuity of human culture whose origins we seek to understand.

We begin at Magdalen Bridge, looking up from the riverside to the Great Tower of Magdalen College, reputedly described by King James I as 'the most absolute tower in England'. The decoration of the tower draws the eye upwards, a chorus of stone faces looking out from close to the top like guardians of this strategic point for

crossing the Cherwell just north of its confluence with the Thames beyond Christ Church Meadow. At 6 a.m. on the First of May, the College Choir delivers the *Hymnus Eucharisticus* from the top of the Tower, the boys and men adding their flesh-and-blood voices to the song of their stone counterparts. Holman Hunt depicted the preparations of the performers in his 1890 painting *May Morning on Magdalen Tower*, capturing the pantheistic flavour of a Christian ceremony with pagan roots by including a Parsee in the group of clerics attending the event. It used at that time to take place at 4.00 a.m., to coincide with the sunrise. Nowadays, the more convenient hour allows large crowds to gather outside the College. The gargoyles that are visible to those standing to the west of the Tower further up the High Street, some playing musical instruments, continue the frozen music of this strange performance. Throughout Oxford, stone figures look out over the rooftops, some saintly, some grotesque, animal or devilish in their appearance. Above the heads of the population, a silent re-enactment proceeds between the forces of heaven and hell. Magdalen herself, with her urn of precious ointment, stands in a niche over the main gate, next to which, above the Porter's Lodge, there are sculptures including an angel playing a wind instrument in close proximity to a monkey-like animal with a piece of fruit. More than three centuries before Darwin, the medieval stone masons amused themselves with this contrast of form and function between the earthbound and the ethereal.

Voices singing from high places reverberate through human history. The biblical story of Babel tells of men's arrogance in building to a height which threatened the heavens themselves, God's punishment for which was the terrible curse of mutual incomprehension. Singing together from the top of a tower perhaps represents a reconciliation, whereby the acoustic use of the height of the building is employed both to exploit the human capacity for amplifying sound through cooperation, and to broadcast a message to those listening below. Did Christ himself sing the Beatitudes? If his words were audible to crowds of up to 5,000 in the open air, he may well have employed a vocal delivery consistent with rabbinical practice and closer to chant than to everyday speech. Islam similarly has its call to prayer, the solo muezzin at the top of the minaret recruiting a response from the faithful in which aural and visual symbolism combine to bring the presence of Allah to mind daily at appointed times.

The Old Testament book of Isaiah contains passages which contribute to defining the role of angels in the subsequent traditions of all three great monotheist religions. First we meet the Seraphim, servants at the throne of God. The order of Cherubim fulfils a similar function in later texts:

1 In the year that king Uzziah died I saw also the Lord sitting upon a throne, high and lifted up, and his train filled the temple.
2 Above it stood the seraphims: each one had six wings; with twain he covered his face, and with twain he covered his feet, and with twain he did fly.
3 And one cried unto another, and said, Holy, holy, holy, is the LORD of hosts: the whole earth is full of his glory.
(Isaiah 6:6)

This passage was set to music by Sir John Stainer as a substantial celebratory anthem. It is recalled in St Luke's Gospel as sung by the angels to the shepherds on the eve of Christ's nativity, in which version it makes a memorable appearance in Handel's *Messiah*. Stainer was appointed organist at Magdalen in 1860 and was elected Professor of Music of the University some thirty years later. He is buried in Holywell cemetery, adjacent to St. Cross Church. A contributor to the *Musical Times* recalled that '... the birds sang an appropriate Requiem' as his coffin was laid to rest.

As long ago as the fifth century, the song of the Seraphim from Isaiah was included in the cycle of texts which make up the Catholic Mass, the *Sanctus*, and is one of the oldest sections of the traditional liturgy. Boy choristers, such as those in Holman Hunt's painting of Magdalen, have been depicted in a tradition associated with the Biblical cherub throughout the development of European art and design, from the paintings of the great masters of the Renaissance to Victorian Christmas cards; while 'Cherubs' is often employed as a term for a junior or training choir in North America. The connection between vocal expression and supernatural powers, including flight, lives on in language and culture. We emerge on wings of song.

In a succeeding chapter of Isaiah (14) we hear of Lucifer, the rebel angel:

12 How art thou fallen from heaven, O Lucifer, son of the morning! how art thou cut down to the ground, which didst weaken the nations!

13 For thou hast said in thine heart, I will ascend into heaven, I will exalt my throne above the stars of God.

Milton's *Paradise Lost* is an extensive retelling of this narrative and its New Testament interpretation, composed during a century of religious strife in England which pitted Catholic against Protestant and finally extinguished the divine right of Kings to rule the country.

Milton's epic narration begins with an exhortation to the 'heavenly muse' to sing her account, since

...thou from the first
Wast present, and, with mighty wings outspread,
Dove-like sat'st brooding on the vast Abyss...

The fall of Lucifer is recalled in graphic images of violent judicial punishment, later captured by artists such as Blake and Doré:

The infernal serpent; he it was, whose guile,
Stirred up with envy and revenge, deceived
The mother of mankind, what time his pride
Had cast him out from Heaven, with all his host
Of rebel angels, by whose aid, aspiring
To set himself in glory above his peers,
He trusted to have equalled the Most High,
If he opposed; and with ambitious aim
Against the throne and monarchy of God
Raised impious war in Heaven and battle proud
With vain attempt. Him the Almighty Power
Hurl'd headlong flaming through the ethereal sky
With hideous ruin and combustion down
To bottomless perdition; there to dwell
In adamant chains and penal fire,
Who durst defy the Omnipotent to arms.

The balance between good and evil involves the process of change. In religious and mythical tradition, it is transitions – corruption, salvation, sacrifice – which have left their mark on belief and culture. Lucifer, the personification of wickedness, was an angel who preferred to rule in Hell than serve in Heaven. In Oxford High Street, the proximity of the Chapel of Magdalen and the University Church of Mary the Virgin presents a contrast between goodness attained – Magdalen the penitent sinner – and goodness inherited – Mary, the spotless rose and Mother of God. The doctrine of

Original Sin, the legacy of Adam's fall and its cause, his temptation by the fallen Eve beguiled by Satan in serpent form, defined for Christians their purpose on this Earth: to live by deeds and thoughts which allowed entry to Heaven rather than eternal damnation.

In the poem 'Magdalen at Michael's Gate', by Henry Kingsley, the penitent Mary gains entrance to paradise through the intercession of a blackbird:

Magdalen, at Michael's gate,
Tirlèd at the pin.
On Joseph's thorn sang the blackbird,
Sang the blackbird, "Let her in, let her in!"
"Hast thou seen the wounds?"
said Michael, "Knowest thou thy sin?"
"It is evening," sang the blackbird,
Sang the blackbird, "Let her in, let her in, let her in!"
"Yes, I have seen the wounds,
And I know my sin."
"She knows it well," sang the blackbird, "Let her in, let her in."
"Thou bring'st no offerings?" said Michael,
"Naught save sin!"
"She is sorry," sang the blackbird,
"She is sorry, let her in, let her in."
When he had sung himself to sleep,
And night did begin, and night did begin;
One came and opened Michael's gate,
And Magdalen went in.

Henry Kingsley had been a student at Worcester College, where he graduated in 1853. He was brother of the Charles Kingsley, author of *The Water Babies*, in which the abused young chimneysweeps are magically transformed into cherubic figures. His extraordinary poem was set to music for choir and piano by H. Walford Davies, the blackbird's song depicted in increasingly insistent calls in the high treble register of the piano. Stainer had earlier written a cantata *St Mary Magdalen* for the Gloucester Festival in 1883.

The University Church, further up the High Street, is dedicated to the other Mary, St Mary the Virgin, and was built in 1280. It once housed the University's reference library and was used for degree ceremonies. The trials of the Oxford Martyrs, Latimer, Ridley and Cranmer, were held in the church in 1555-6: holy men consigned

to the fate of the heretic, with its symbolic link to Lucifer's fiery punishment, they were burnt at the stake in Broad Street just to the north. The courts of the land thus dispensed their earthly representation of divine justice. The final moments of Latimer and Ridley are captured in Fox's Book of Martyrs:

A lighted fagot was now laid at Dr. Ridley's feet, which caused Mr. Latimer to say: "Be of good cheer, Ridley; and play the man. We shall this day, by God's grace, light up such a candle in England, as I trust, will never be put out."

When Dr. Ridley saw the fire flaming up towards him, he cried with a wonderful loud voice, "Lord, Lord, receive my spirit." Master Latimer, crying as vehemently on the other side, "O Father of heaven, receive my soul!" received the flame as it were embracing of it. After that he had stroked his face with his hands, and as it were, bathed them a little in the fire, he soon died (as it appeareth) with very little pain or none.

In the century which separates the Oxford Martyrs from the publication of Milton's *Paradise Lost*, Europe reeked of roasted human flesh as courts clerical and secular upheld accusations of heresy, witchcraft and dissent. Fear of the stake, and of the instruments of torture employed to extract the confessions which condemned the accused, reinforced the means by which the authorities sought to 'justify the ways of God to men'. The explosion of scientific and artistic creativity which emerged at the end of this period, towards the end of the seventeenth century, clearly relates to the waning of religious conflict and the greater tolerance which ensued.

Friars and Scientists

As we move away from our starting position and the environs of Magdalen, crossing the High Street towards the Botanical Garden, a glance across the bridge down the Iffley Road permits a distant view of buildings on the far side of the Cherwell. On the right is the University Athletic track where Roger Bannister ran the first sub-four-minute mile in 1954, a landmark in the ancient tradition of education of mind and body, *Mens sana in corpore sano*. Beyond is the remaining link with one of Oxford's most influential pre-Reformation centres of learning, Greyfriars Hall, still a Franciscan friary and, since 1957, a Hall of the University. Its history can be traced back to the earliest development of the University at the beginning of the thirteenth century. Two of the jewels in the crown of this initial outpouring of new ideas and

academic influence were Roger Bacon and William of Occam. Both had associations with the original Greyfriars.

The curriculum of the medieval university reflected the monastic origins of the institution. Learning which had survived from Greek and Roman authorities combined with an approach to knowledge consistent with the interpretation of the Bible as presented in these ancient languages. Students began their studies earlier than they might today, sometimes as young as 13. Their first challenge was mastery of the *trivium*: Latin (grammar and literature), rhetoric, and logic. This led to the Bachelor's degree or its equivalent, after which the *quadrivium* was attempted. Music, which was approached through theories of proportion and philosophical speculation, took its place alongside arithmetic, geometry and astronomy. Together they represented the body of method and knowledge which was examined for the Master's degree.

Bacon took his first degree in Paris in about 1241, but by the end of the decade was working in the new University of Oxford. His work on optics and geometry was ahead of its time, and includes a description of the potential of lenses which would be exploited in the development of the telescope and microscope long after his death:

For we can so shape transparent bodies, and arrange them in such a way with respect to our sight and objects of vision, that the rays will be reflected and bent in any direction we desire, and under any angle we wish, we may see the object near or at a distance ... So we might also cause the Sun, Moon and stars in appearance to descend here below...

Work of this kind led him to be considered the father of scientific method which matches systematic observation to quantitative record, summed up in his dictum 'Mathematics is the door and the key to the sciences'. Sadly, his potential patron Pope Clement IV died before Bacon could publish his major works, and the final years of his life were plagued by the restrictive actions of his Franciscan brothers, who imprisoned him for 'suspected novelties' in his teaching. While Bacon, like Galileo and Leonardo, suffered as a scientist from the disapproval of the prevailing theologically-determined culture, his works nevertheless established a place for the sciences at Oxford which was eventually to become recognised as appropriate to the purpose of the University system throughout the world. For a man whose final

writings were produced in 1293, this is a remarkable achievement. He died in Oxford the following year.

William of Occam studied theology at Oxford in the generation after Bacon's death. Though his MA was withheld on the grounds that his mathematical and logical definitions of proof were at odds with theological revelation, he was employed as a lecturer at the University from 1317 to 1319. His work attracted the disapproval of the Pope, and he was summoned to defend himself at Avignon in 1324. As a Franciscan, William applied the force of logic to the proposition that the church should remain true to Christ's teaching regarding poverty, and that the papacy should not be driven by the accumulation of wealth and material influence. Excommunicated for his views in 1328, he fled to Munich where he came under the protection of the Emperor. A fictional variation on his life forms the background to Umberto Eco's novel *The Name of the Rose*, in which the personality of the historical Occam is fused with that of Sherlock Holmes as the monk-sleuth William of Baskerville.

William's contribution to science and philosophy is best represented by the principle which has become known as Occam's Razor: 'plurality should not be assumed without necessity'. This has again become influential in the development of recursive mathematical logic which led to the invention of the computer. Simplicity means faster and more accurate programming. The most likely explanation for a phenomenon is the most lucid which is consistent with observational evidence. Occam's Razor is an elusive tool, since its employment requires us to question, at whatever cost, assumptions which tradition and authority have bequeathed. A convincing argument for the evolutionary basis of human music is set on just such a collision course. The story of the devout but open-minded Franciscans Bacon and Occam illustrates that, from the earliest days of University discourse in Europe, tension between belief and experience placed the observational scientist and his work at risk of religious suppression. It is a key theme of the argument in this book that, in more respects than we may realise, this remains so to this day.

The natural and supernatural worlds

Music is, in many cultures, the means by which the world came into being. The Dreamtime creation story of the Australian aborigines places humankind at one with the spirit-doubles whose characteristics define both music and human personality:

Rising from the waterholes, the Ancestors stood up with mud falling from their bodies. As the mud slipped away, the sun opened their eyelids and they saw the creatures they had made from their own bodies. Each Ancestor gazed at his creation in pride and wonderment. Each Ancestor sang out with joy: "I am!" One Ancestor sang "I am kangaroo!" Another sang "I am Cockatoo!" The next sang "I am Honey-Ant!" and the next sang "I am Lizard!"

As they sang, naming their own creations, they began to walk. Their footsteps and their music became one, calling all living things into being and weaving them into life with song. The ancestors sang their way all around the world. They sang the rivers to the valleys and the sand into dunes, the trees into leaf and the mountains to rise above the plain. As they walked they left a trail of music.

The Sia people of New Mexico tell the story of the spider, Sussistinnako, who sings the world into being. Similarly, the Asmat of the southern coastal area of Irian Jaya, Melanesia, have a creation myth which tells how wooden figures were carved by the creator, Fumeripits, who then brought them to life through the power of drumming. David Waterhouse reports that, in the field of traditional Japanese religious ritual:

All Shintō music traces its origins to the myth of an erotic dance performed by the goddess Ame no Uzume no Mikoto before the Rock Door of Heaven to entice out the Sun Goddess, who was hiding her light from the world and causing crops to fail.

Hugo Zemp describes a relationship between music, creation and the characterization of the animal world which is widespread in human cultures on every continent:

For the Dan people of the Ivory Coast, music is not only a human concern: myths attribute the origins of musical instruments to animals or to bush spirits. The Dan believe that spirits are particularly fond of music and that they help musicians to play with vigour. Hunters believe that music gives them power over the guardian spirits of animals, and thus use music to assure themselves of good hunting. Masks, which are personifications of bush spirits, are often expressed through music.

Curt Sachs, one of the founding fathers of systematic ethnomusicology, surveyed the relationship between myth and music from the opposite viewpoint: that of the origins of music in the world's earliest surviving literature. Writing in 1943, his stance was unsentimental:

Naïve thinking, prone to personalize evolutions that never depended on single persons, and more interested in scenic acts of creation than in slow and simple developments, has ascribed the art of music to gods and deified mortals.

He illustrates this with examples such as the biblical Jubal, 'father of all such as handle the lyre and pipe'; the Egyptian god Thot, supposed inventor of the lyre; Apollo, peerless player of the kithara; and the Indian, Narada, who invented the harp. Sachs then attempts to separate such myths from historic accounts of musical practice and performance. He cites Sumerian texts of the third millennium BC, which describe the training of choirs in their temples. Instrumental performance on pipe and lute is then depicted on Babylonian artefacts from the same period and subsequently. A wide variety of instruments – harps, zithers, oboes, cymbals, sistra – appear in Egyptian culture from 1,500 BC. The Psalms of David mention similar instruments, and include instructions for their use in religious ritual.

Sachs's survey of the wellsprings of music revisits the encyclopaedic first history of music in English laid out by Charles Burney and first published in four volumes between 1776 and 1789. Burney took the degrees of Bachelor and Doctor of Music at Oxford in the same year, 1769, at the age of 43. His approach to the subject is steeped in classical learning, both literary and philosophical. Nevertheless, despite a scepticism the equal of Sachs's, he too makes room for some myths of the power of music. These include: Amphion building the walls of Thebes with the sound of his lyre; a grasshopper 'supplying the place of a broken string in the musical contest between Eunomaes and Ariston at the Pythian games'; and how Arion the singer and harpist so charmed a dolphin that it saved him from drowning when he was thrown overboard by robbers.

C. S. Lewis, Fellow of Magdalen College, drew on such traditions in depicting the character and behaviour of the lion/god figure Aslan, who first appears in *The Magician's Nephew*, the opening volume of *The Chronicle of Narnia*. The children

who enter Narnia through The Wardrobe are, like Carroll's Alice, both characters from Lewis's imagination and the dedicatees and inspiration for the various stories. A group of them witnesses an event of cosmic significance in the land beyond the Wardrobe:

In the darkness something was happening at last. A voice had begun to sing. It was very far away and Digory found it hard to decide from what direction it was coming. Sometimes it seemed to come from all directions at once. Sometimes he almost thought it was coming out of the earth beneath them. Its lower notes were deep enough to be the voice of the earth herself. There were no words. There was hardly even a tune. But it was, beyond comparison, the most beautiful noise he had ever heard. It was so beautiful he could hardly bear it...

Then two wonders happened at the same moment. One was that the voice was suddenly joined by other voices; more voices than you could possibly count. They were in harmony with it, but far higher up the scale: cold, tingling, silvery voices. The second wonder was that the blackness overhead, all at once, was blazing with stars.

When the children eventually encounter Aslan, the creature's combination of lion-like characteristics and supernatural abilities are spelt out:

The Lion paid no attention to them. Its huge red mouth was open, but open in song not in a snarl. It passed by them so close that they could have touched its mane.

Lewis presents Aslan as a Christ figure, able to atone for the sins of others and survive the ordeal. But the principal instrument of his power is his voice:

The Lion opened his mouth, but no sound came from it; he was breathing out, a long, warm breath; it seemed to sway all the beasts as the wind sways a line of trees. Far overhead from beyond the veil of blue sky which hid them the stars sang again; a pure, cold, difficult music.

Nevertheless, Aslan is capable when necessary of great violence and fearsome authority. The gentle but immense power of his song contrasts with his capacity to roar: in Blake's terms, Aslan's Christ-like personality has properties of both *Tyger* and *The Lamb*.

A significant aspect of the description of Aslan's creation song is 'There were no words'. Consider the contrast with another creation description, the opening of St John's Gospel:

In the beginning was The Word, and the Word was with God, and the Word was God.

For all its majesty, one can regard this passage as the source of a logocentric world-view in the Christian philosophical tradition. The primacy of the word, and the role of language in placing humans uniquely above the animals as creatures with souls, has remained a key tenet of Western philosophy well beyond the point at which theology ceased to determine its course.

The role of music was a matter of great concern to St Thomas Aquinas: his *Summa Theologia*, contemporary with the writings of Roger Bacon, includes an extensive discussion on the theme 'Whether God should be praised with song?' In the manner of medieval disputation, Aquinas airs both sides of the argument. On the one hand:

we should employ nothing in the divine worship, save what is delivered to us on the authority of Scripture. Therefore it would seem that, in praising God, we should employ, not corporal but spiritual canticles.

Quoting St Jerome, he adds:

"Listen, young men whose duty it is to recite the office in church: God is to be sung not with the voice but with the heart. Nor should you, like play-actors, ease your throat and jaws with medicaments, and make the church resound with theatrical measures and airs".

Despite the instruments mentioned as fit for praising God in the Psalms,

the Church does not make use of musical instruments such as harps and psalteries, in the divine praises, for fear of seeming to imitate the Jews.

On the other hand, Aquinas draws on alternative authorities to support the case for singing:

On the contrary, Blessed Ambrose established singing in the Church of Milan, as Augustine relates (Confess. ix).

Wherefore Augustine says (Confess. x, 33): "I am inclined to approve of the usage of singing in the church, that so by the delight of the ears the faint-hearted may rise to the feeling of devotion": and he says of

himself (Confess. ix, 6): "I wept in Thy hymns and canticles, touched to the quick by the voices of Thy sweet-attuned Church."

But:

To arouse men to devotion by teaching and preaching is a more excellent way than by singing.

But if the singer chant for the sake of devotion, he pays more attention to what he says, both because he lingers more thereon, and because, as Augustine remarks (Confess. x, 33), "each affection of our spirit, according to its variety, has its own appropriate measure in the voice, and singing, by some hidden correspondence wherewith it is stirred." The same applies to the hearers, for even if some of them understand not what is sung, yet they understand why it is sung, namely, for God's glory: and this is enough to arouse their devotion.

Clive Pare, once Mayor of Canterbury and Headmaster of the city's Cathedral Choir School, was reputed to say 'There is more power of conversion in a well-sung anthem than in any sermon'. In the world of myths, legends and creation stories, music remains the means by which members of our species communicate with a superior being. While our capacity for speech is unmatched by animals, in singing we aspire to the condition of angels. As in the story of Babel, this may involve an arrogance which some believers cannot tolerate. Thus religious observance has developed over the centuries to embrace: the spoken word, but not song; song, but without instrumental accompaniment; the entire spectrum of vocal and instrumental sound; or even the respectful shared silence of the Quakers.

In the scientific examination of the nature of human responses to the environment and the processes of human thinking, the need for gods has been proposed as an evolved phenomenon essential to the development of culture which has shaped human survival. The new discipline of evolutionary psychology has given rise to speculation on the relationship between reconstruction of early man's behaviour and the workings of the brain revealed by clinical technology, supporting the proposition that religious belief itself has played a part in evolution. Pascal Boyer and Simon Atran have led the way in devising an evolutionary theology, while Alondra Oubré has developed the theory that music was essential to the capacity to share imaginative representations of heightened experience which was the foundation of human culture. Such ideas are

consistent with the models of cultural evolution in the work of the archaeologist Steven Mithen and the psychologist Merlin Donald.

What these writers have constructed is a context in which the development of the faculty of imagination can be traced so as to accord with the timescale which separates modern *Homo sapiens* from his ape ancestors, placing what can be learnt from his biological remains alongside the story revealed by his artefacts and detritus. Analysis of the theories presented in their work will prove central to an understanding of how mankind evolved a capacity for song; and why this may have been so important. A form of symbolic communication, whether vocal music or protolanguage, made possible the symbolic representation of absent phenomena. Initially, this may have allowed the description or location of objects separated by distance, much as dancing bees can share information about sources of food. Ritual will have added the recreation of past events and the anticipation of the future. It is a small step from this representation of the real but absent to depiction of the impossible and imaginary: contemplation of the unknowable, e.g. life after death; other worlds; mythical creatures.

One element in the construction of our perception of reality which has left its mark on human thought is the property of duality. We are bipedal creatures with strongly bicameral brains and two clearly differentiated sexes. As this quality of duality extends to abstraction and behaviour, it embraces the opposition between good and evil. Right and left (the Latin *dexter* and *sinister*) have been retained in the English language to suggest acceptable and suspect qualities respectively. The balanced forces of Manicheism, of *yin* and *yang*, emerge in our contemplation of ourselves in the debate between emotion and reason, nature and nurture. These, too, influence the story of why and how we sing. While singing can, as we will discover, have beneficial properties in the feeling of well-being it can bring to individuals and in the coordination of group actions, it is by no means necessarily a force for good. Adolf Hitler ascribed his capacity for iron self-discipline to his training as a boy chorister in the cathedral of his home town of Linz.

The Classical portico of Oxford's Botanical Garden beckons the visitor into a magical world. Endowed by Bishop Wayneflete in 1621, it owes its existence here to the

considerable reputation at that time of the sciences at Magdalen. In Philip Pullman's trilogy *His Dark Materials*, a bench beneath a tree in the Botanical Garden represents a unique and significant link between the real Oxford in which our walk takes place and the Oxford of an imaginary parallel world. Here, the two main characters are able to feel close despite their separation - the boy Will in our Oxford and the girl Lyra in hers, with her spirit-double Pantalaeon sitting above her in the tree.

Pullman's fantasy has an enticing internal logic, for all the twists and turns of the books' extraordinary plot. When Will meets Lyra by crossing into her world, she is as astonished that he has no *daemon* as he is in first encountering Pantalaeon. Will's familiar world is our own secular society. Lyra's represents a strange kind of theocracy, as if the European Reformation had taken a different turning and led to a new variant of Catholicism ruled from Geneva. Meanwhile, Tartar shamans continue to practise trepanning, and Oxford scholars go north in search of elementary particles associated with the Aurora Borealis.

Pullman's bestiary in the two alternative worlds he creates draws on the known supernatural beings of world mythology (many traceable in Oxford's gargoyles), with some unique adaptations: angels; harpies; cliff-ghasts; witches; wheeled quadrupeds like something from the pen of M. C. Escher; above all, an armoured bear who combines features of Lewis's Aslan and the biblical St Michael with Schwarzenegger or Stallone. The daemons of Lyra's world recall the spirit doubles familiar in Australian aborigine and North American cultures.

Another motif in *His Dark Materials* is the representation of helicopters and airships, which permit aerial battles between human and winged or flying creatures like a cross between Dante and the Biggles books of Captain W. E. Johns. Pullman captures in this a historic connection between the imaginary capacity for flight of supernatural creatures and man's dream of defying gravity and joining the birds in the medium of the air. As in the heavenward aspiration of Babel, man's attempt to fly in myth is doomed to failure. Icarus's fall is as unavoidable as Lucifer's.

Nevertheless, the defiance of gravity did not remain beyond human reach. The road to the Wright brothers' success at Kittyhawk involved all too many failures, including

the unrealisable visionary designs of Leonardo da Vinci, who left drawings predicting three mechanisms for human entry into the world of birds: the glider; helicopter; and parachute. Montgolfier came up with the alternative solution of the hot air balloon. The English inventor, Sir George Cayley, pre-empted the Wright brothers by fifty years in designing a controllable glider. Man's eventual solution of the problem of flight was won only at the expense of broken bodies and bruised egos.

The art and literature of humankind is disproportionately obsessed with the depiction of flight. Strangely, the angels of popular depiction have nil aerodynamic properties – though as supernatural beings there is no need for them to obey the laws of technical design. Nevertheless, it is interesting to consider why winged figures, both human and equine, represent such an icon of assumed beauty. Were beings of human proportion to have the power of flight, they would be vast, squat, muscular monstrosities with huge pigeon chests and spindly legs. The Harpy is closer to this shape than any conventional angel. But winged figures of impossible design represent the height of attractiveness from the Bible and Assyrian bas-reliefs via the Winged Victory and the panned feet of Hermes/Mercury to the character Pygar in the film *Barbarella*.

So widespread and influential on art and culture are the stories of angels that it is worth our acquainting ourselves further with the sources which mention their appearance, as well as some of the works of literature, painting and music which represent them to us.

A key passage in the Old Testament occurs in Genesis 28: 10-17:

Jacob left Beer-sheba and went toward Haran. He came to a certain place and stayed there for the night, because the sun had set. Taking one of the stones of the place, he put it under his head and lay down in that place. And he dreamed that there was a ladder set up on the earth, the top of it reaching to heaven; and the angels of God were ascending and descending on it.

Jacob's Ladder was depicted by Blake in a watercolour completed in 1800; and in *The Flower Book*, by Sir Edward Burne-Jones, published posthumously by his wife in 1905. Schoenberg's unfinished oratorio, *Die Jakobsleiter*, composed to his own text, was a turning-point in its troubled composer's development. Thomas Mann drew on his knowledge of Schoenberg's creative struggle for the character of the composer

Leverkuehn, who invents a 12-tone system of composition in order to develop the new sound-world required for his own biblical oratorio *Apocalypsis cum Figuris* in the novel *Dr Faustus*. Schoenberg's understandable sensitivity to the idea that he had developed his musical language via a pact with the devil elicited a disclaimer – the nearest such an artist would give to an apology – on the final page of Mann's publication.

We have met Lucifer, Mephisto, the tempter of the historical and metaphorical Fausts. What of the good angels, the loyal soldiers of the true God? In the Judaeo-Christian scriptures there are four Archangels: Gabriel, Raphael, Uriel and Michael. Gabriel is perhaps best-known in that he is encountered by children in the widespread practice of carol singing and the presentation of nativity plays which have emerged from the story as told in St Luke's Gospel:

In the sixth month the angel Gabriel was sent from God unto a city of Galilee named Nazareth, to a virgin espoused to a man whose name was Joseph, of the house of David; and the virgin's name was Mary. And the angel came in unto her and said, Hail, thou that art highly favoured, the Lord is with thee: blessed art thou among women.
Luke 1:26-28

The *Annunciation*, Gabriel's appearance to Mary of Nazareth, was depicted by the majority of artists of the Renaissance: Giotto (fresco in the Capella degli Scrovegni, Padua); Dürer (woodcut); Fra Angelico; Fra Lippo Lippi; Raphael (the Oddi Altar). The biblical text which is their source has been set by composers such as Hans Leo Hassler (*Dixit Maria*), Tomas Luis Da Vittoria (*Ne Timeas, Maria*) and in the anonymous carol from thirteenth century Winchester *Angelus ad Virginem*. It is also memorably retold in a poem by Nahum Tate, author of the Christmas hymn *While shepherds watched their flocks by night*. Henry Purcell set a text by Tate as the dramatic solo cantata *The Blessed Virgin's Expostulation*, the climax of which is a repeated exhortation to the now absent Gabriel. The consequent to this passage in St Luke, Mary's canticle *Magnificat*, has been sung for centuries at Vespers in the cathedrals, monastic churches and royal chapels of Catholic Europe; and at Evensong in the university chapels and cathedrals of the Anglican faith. Settings of the *Magnificat* text rank amongst the greatest works of William Byrd, Andrea Gabrieli, Claudio Monteverdi, Heinrich Schütz, J. S. Bach, Charles Stanford, Herbert Howells and Michael Tippett.

Given the significance of the Angel Gabriel to the Christian tradition, it is in many ways remarkable that, in the Islamic faith, he is the angel, Gibreel, credited with delivering the Koran to the Prophet Mohammed. Gabriel's mission to Mary is itself mentioned in the Koran.

The Angel Raphael is most closely associated with the story of Tobias, in the Old Testament. This was set as an Italian-style oratorio, *Il ritorno di Tobia*, by Joseph Haydn in 1775. Archangel Uriel is mentioned in the Book of Enoch, and in our age has become a focus for new-age spirituality and religious ecology. The Archangel whose presence most impinges upon our story is Saint Michael, who is accorded a feast day in the Christian calendar, Saint Michael and All Angels, on September 29th. It was Michael who admitted Magdalen to Heaven in Kingsley's poem. It is significant that Michael is given a status consistent with human qualities, redolent of St Paul's advice:

Be not forgetful to entertain strangers: for thereby some have entertained angels unawares. (Hebrews 13:2)

A Saint's day requires a distinctive liturgy which celebrates its dedicatee with appropriate bible reading and traditional prayers. These are sometimes set to music as anthems. The appointed readings for St Michael provide an insight into the role of angels in Christian theology. The first prayer (Collect) for St Michael reads:

O everlasting God, who hast ordained and constituted the services of angels and men in a wonderful order; Mercifully grant, that as thy holy angels always do thee service in heaven, so, by thy appointment, they may succour and defend us on earth; through Jesus Christ our Lord. Amen.

The Epistle at Mass is taken from the Book of Revelation:

War broke out in heaven; Michael and his angels fought against the dragon. The dragon and his angels fought back, but they were defeated, and there was no longer any place for them in heaven. The great dragon was thrown down, that ancient serpent, who is called the Devil and Satan, the deceiver of the whole world - he was thrown down to the earth, and his angels were thrown down with him. Revelation 12: 7-12.

The First Lesson at Evening Prayer begins:

And at that time shall Michael stand up, the great prince which standeth for the children of thy people: and there shall be a time of trouble, such as never was since there was a nation even to that same time: and at that time

thy people shall be delivered, every one that shall be found written in the book. Daniel 12:1-3

The Second Lesson at Mattins reads:

When he had made purification for sins, he sat down at the right hand of the Majesty on high, having become as much superior to angels as the name he has inherited is more excellent than theirs. For to which of the angels did God ever say, "You are my Son; today I have begotten you"? Or again, "I will be his Father, and he will be my Son"? and again, when he brings the firstborn into the world, he says, "Let all God's angels worship him." Of the angels he says, "He makes his angels winds, and his servants flames of fire." But of the Son he says, "Your throne, O God, is forever and ever, and the righteous sceptre is the sceptre of your kingdom. You have loved righteousness and hated wickedness; therefore God, your God, has anointed you with the oil of gladness beyond your companions."

Are not all angels spirits in the divine service, sent to serve for the sake of those who are to inherit salvation? Hebrews 1:13-2:10.

Although University term in Oxford now commences at the beginning of October, it is still named after this saint, *Michaelmas*. The influence the prescribed texts for Michaelmas provide on the iconography of Christian art, on Milton, on the stained glass windows and gargoyles of the medieval cathedrals, and on the traditional view that the battle between good and evil is constant and takes place both on earth and in other dimensions, has had an enormous impact on the environment in which people have sung through the ages – or been constrained from doing so.

Wings of Song: theme and variations

Turning left into Merton Street, just to the west of the Botanical Garden, we arrive at one of Oxford's most distinctive views, looking towards Merton, Corpus Christi and Oriel. It is not difficult to imagine oneself here transported back several centuries. On the left is another imposing tower, that of Merton Chapel: more squat and spacious than Magdalen's, as is the chapel itself, with a resulting acoustic which is perhaps the most eerily resonant in Oxford. The Nobel prize-winning ethologist Nico Tinbergen, whose analysis of instinct plays a major role in our argument, was a Fellow of Merton and Professor of Animal Behaviour at the university.

At Oriel, the House of the Blessed Mary the Virgin in Oxford, John Henry Newman was a Fellow as well as vicar of the University church of St Mary the Virgin. Newman was the leading figure in the Oxford Movement, which sought to reintroduce Catholic theology and practice to the Anglican church. Frustrated by the political and personal problems of this mission, he eventually joined the Catholic Church himself, rising to the position of Cardinal. He is best known today as the author of the text Edward Elgar set in his 1899 oratorio *The Dream of Gerontius*. A stained glass window commemorating Newman was installed in 2001. The window is in the oriel, over the entrance to the chapel, and features Newman sitting below the Virgin, both surrounded by angels.

Angels, singing to the beat of their own wings, represent an image which has been adopted in the title of this book. The full resonance of this phrase, *Wings of Song*, both in its nineteenth century origins and in subsequent allusions, has consequences for our argument which span political and ethical as well as musical and cultural concerns.

Mendelssohn's song *Auf Flügeln des Gesanges* was one of the standards of its day and the generation which followed, familiar both as a sentimental drawing-room song and in arrangements for instruments such as violin and harp, and in mechanical versions for toybox. The second of the 6 *Songs*, Op.34 (1834-7), it sets a poem by Heinrich Heine:

On wings of song,
Love of my heart, I carry you away,
Away to the waters of the Ganges,
Where I know the most beautiful place.

There a red-flowering garden lies
In the quiet moonlight;
The Lotus flowers await
The blooming of their siblings.

The violets, giggling and cooing,
Show themselves to the stars above;
Secretly the roses whisper
Fragrant fables to one another.

Leaping while they eavesdrop
Are pious and clever gazelles;
And in the distance rushes
The current from the holy spring.

There we will want to slump
Beneath the palm tree,
And drink of love and peace,
And dream the blessed dream.

Mendelssohn and Heine were, in the image of the poem, amongst the holy springs, from which German Romantic art emerged as a civilising element of the nineteenth century's progress towards democratisation, industry, and the spread of European ideas of liberalism and individuality throughout the world. Yet both were assimilated Jews, converted Protestants whose leadership in German culture would be repudiated in a later generation. Heine (1797-1856) flirted in his writing with political issues:

Denk' ich an Deutschland in der Nacht
Dann ist's um meine Ruh' gebracht

(Think I of Germany in the night,
Then my peace of mind takes flight ..)
Germany, a winter fairy tale (1844)

He admired French culture above German, preferring to speak French despite the masterful expression in his mother-tongue of his widely published poetry. He corresponded with Marx and was translated by Engels, which, together with his liberal ideas, determined his popularity in communist circles. For this reason and because of his Jewish origins, the Nazis decreed that, in the programmes of song recitals and entries in poetry anthologies, his lyrics should be marked 'author unknown'.

By comparison, Mendelssohn was a less radical figure, though his musical legacy was powerfully influential in several respects. He played a crucial role in the revival of Bach's major works, his performance of the *Matthew Passion* in Berlin in 1829 revealing the work to the acclaim of performers and audience alike. Hegel and Heine were present. Mendelssohn conducted from memory without a score, since there had been insufficient time to prepare one. His reputation as a conductor in Berlin and Düsseldorf rested on his ability to enthuse performers to attempt new and unfamiliar

repertoire and to prepare its presentation to high standards. He was a pioneer in the development of festivals in which choruses of enthusiastic amateurs combined with professional orchestras to present new works, contributing to this tradition in both Germany and England. As a composer, he left a legacy of music for church and concert hall which influenced successors as different as Berlioz, Wagner, Brahms, Tchaikovsky and Elgar.

While not courting political controversy like Heine, Mendelssohn also encountered hostility due to his Jewish origins. In May 1833 he directed a performance of Handel's *Israel in Egypt* at the Nether-Rhenish Music Festival in Düsseldorf. A group of student demonstrators picketed the event with a placard reading "Christian music for Christian musicians". To Eduard Devrient, the actor whom he engaged to recreate the role of Jesus in the *St Matthew Passion*, Mendelssohn had written: "To think that it was an actor and a Jew who gave back to the German people their greatest Christian work".

The roles of lyricist and composer granted to Heine and Mendelssohn both a place in society and an income earned on merit. Publication of poetry and song was finding a large new audience on both sides of the Atlantic and throughout an extended Europe. The ideas behind the little song which best represented their collaboration would become a motif of unusual vigour in the ensuing century.

Songs which link flight to the experience of vocal music have had a common hold on the imagination of lyricists and performers. From the repertoire of Frank Sinatra alone one can pick a varied selection:

It was just one of those nights
Just one of those fabulous flights
A trip to the moon on gossamer wings
Just one of those things ('Just one of those things', Cole Porter, 1935)

Fly me to the moon
Let me sing among those stars
Let me see what spring is like
On Jupiter and Mars. (Bart Howard, 1954)

Come fly with me, let's fly, let's fly away (Sammy Cahn and Jimmy Van Heusen, 1957)

Few who know these songs will be able to read their lyrics without hearing their melodies and That Voice. The final couplet of 'Green finch and linnet bird' from Sondheim's *Sweeney Todd* expresses a desire in common with that which can be seen as instinctive to human beings:

*If I cannot fly
Let me sing.*

Charles Causely captures the object of this desire:

I am the song that sings the bird

Yehudi Menuhin drew on a similar image in describing the sensation he sought in performing on his instrument:

If you're crouched over your violin it's no good because you can crush whatever wants to fly; you don't want to pin it down. Playing the violin is a kind of flying; you want it to take off, to take wing. (Menuhin, 1976)

The theme remained popular in the rock music of the late twentieth century in songs such as *I Believe I Can Fly* (R. Kelly, 1996) and *(i Just Wanna) Fly* (Sugar Ray, 1997). Artists are doubtless penning rap and hip hop versions of the same impulse as I write, sharing with Mendelssohn, albeit in a very different verbal and musical language, the sentiment: 'O for the wings of a dove'.

Divine and Human Music

Ah Robyn, gentle Robyn,
Tell me how thy leman¹ doth,
And thou shalt know of mine.

The lyric from this round by William Cornyshe portrays the singer asking advice from his feathered companion. Like the blackbird in Kingsley's *Magdalen*, the robin appears able to influence human affairs.

¹ Lady

Cornyshe was active in the golden period of English church music which represented a flowering of ornate polyphony for the Catholic rite prior to Henry VIII's separation from Rome. The renowned texture of English music of this period resulted from a wide spectrum of range and timbre which combined a rich, low bass quality with the ecstatic soaring of highly-trained boy trebles. Cornyshe played a significant part in the achievement of this sound, and his compositions are featured in the principal surviving source for this repertoire, the *Eton Choir Book*. The Venetian diplomat Sagudino wrote in 1515 that the voices of his Chapel Royal choristers were 'more divine than human', and that the bass voices were unequalled in the world. *Non cantavano*, he wrote, *ma giubilvano*: they do not sing, they jubilate – a term synonymous in the chant tradition with the Pentecostal vision of 'speaking with tongues'.

Our stroll proceeds along Deadman's Walk behind Merton. Passing behind the colleges adjacent to the meadows, we gain an excellent view back towards Magdalen Tower in one direction, and the steeple of Christ Church Cathedral in the other. The church itself was built around 1200 as part of St Frideswide's Priory, and Cardinal Wolsey constructed Cardinal College around it in 1525. He entrusted the development of its musical traditions to the composer John Taverner, who, to Wolsey's evident satisfaction, raised it to a level which rivalled the Chapel Royal itself. The musicologist David Wulstan has assembled an account of the lavish ceremonial Taverner was required to provide for Christmas Day 1527. The sequence of lengthy and elaborate services indicates an extraordinary level of physical stamina and musical creativity on the part of composer and performers. Neither Wolsey nor Taverner was able to build on their achievements. Wolsey fell from grace as a consequence of Henry VIII's divorce from Catherine of Aragon and marriage to Anne Boleyn. He was required to forfeit his possessions to the king, and his college at Oxford was also suppressed, though Henry refounded it as Christ Church in 1546, with its chapel becoming Cathedral of the Diocese of Oxford, and a Dean appointed uniquely to preside over both. Taverner narrowly escaped trial for heresy in 1529, and returned to his roots in Boston where he was associated with the dissolution of church property and where he died in 1545. His Catholic works were adapted by other composers to the English language rite, and the little melody *In Nomine* outlived him, remaining a plaything of later composers including Henry Purcell.

Passing the imposing south-facing buildings of Christ Church to our right, we eventually emerge from the semi-rustic calm of the meadows into the bustle of St Aldate's. To the left along the old road to Abingdon and the south is the Faculty of Music, which hosts the Bate Collection, one of the most fascinating and extensive museums of musical instruments of the European tradition. They have a harpsichord alleged to have been used by Haydn when he visited Oxford, and several wind instruments which have been widely copied by present day makers for period performers. If we take what is on display at the Bate together with the holdings of musical instruments at the Museum of Natural History and the Ashmolean we will encounter later on our walk, Oxford provides an insight into the craft and ingenuity with which mankind has shaped and controlled means of producing sound which is unmatched anywhere in the world. But what of the first instrument we all possess, our ability to sing? Traditionally, in comparison with the instruments we can view, we are led to conclude that 'the voice leaves no fossils': and the human larynx as a museum exhibit would tell us little. Such is the challenge to which this book must rise.

But there is another aspect to this difference between the transitory nature of human voices, which, like the *daemons* in Pullman's fiction, die with their owner, and the permanence of constructed instruments. Even before the Protestant Reformation questioned the use of instruments for worship, destroying organs and choirbooks in an attempt to eradicate the trappings of a discredited faith, pious Catholics in the Netherlands had taken a similarly hostile attitude to musical instruments as the work of the devil. Most familiar of these zealots of the Brotherhood of Our Lady in 's-Hertogenbosch was the painter Hieronymous Bosch, who was born there around 1450 and died in 1516. A reading of Bosch's major paintings, especially *The Garden of Earthly Delights*, makes clear that the way to hell is pointed by musical instruments. Not only does the Devil have all the best tunes: he has the most ingenious way of turning instruments from siren enticements to his path into appliances fit for the most hideous torture. Thus in the right hand panel of *The Garden of Earthly Delights*, which depicts this musical hell, a man is crucified on the strings of a harp while another is garrotted against the neck of a giant lute. Ghastly wind instruments swallow their victims, transforming the faces of those who play them into caricatures.

A giant bagpipe performs a gruesome function consistent with its bulbous, animal origins. Music notation is fit only to be printed on the backsides of sinners, from which it is read by a choir of suffering, naked singers led by a giant frog dressed as a priest. Bosch's harps are not fit for heavenly souls, but ensnare the unwary on the way to eternal damnation.

Ironically, Bosch's paintings are of value to the very people he despised: the makers and players of instruments. For musicologists and makers of replica shawms, lutes and harps, Bosch is a useful foil to the more formal taxonomists of old instruments such as Praetorius or Mersenne, whose depictions are in black-and-white woodcuts. So Bosch tends to be celebrated by players of Renaissance instruments - of which there are many involved with the Early Music scene to which Oxford musicians have made an enormous contribution - for providing full colour representations of his carefully-observed subjects. But Bosch perhaps had the last laugh. When precise copies of the instruments featured in his painting were made for an exhibition at The Bate Collection in 2010, they proved impossible to play well.

Before turning right up St Aldate's towards Christ Church itself, a glance in the opposite direction down the Abingdon Road may just take in Folly Bridge, Oxford's other traditional river crossing over the main River Thames. This is where Bacon is reputed to have found the best position for making astronomical observations. One report has it that he:

... did sometimes use in the night season to ascend this place (his study on Folly Bridge, on an eyot midstream in the Thames) environed with waters and there to take the altitude and distance of stars and make use of it for his own convenience...

Christ Church is a powerful place: a college with a cathedral in its grounds, with an enormous main quadrangle guarded by Tom Tower and its eponymous curfew bell. The magnificent Hall, where Charles I's Parliament sat during the Civil War, is now familiar to millions of children worldwide as the model for the dining hall of Hogwart's in the Harry Potter films. The Royalists stored their ordnance in the Cathedral cloisters. Their nemesis, Oliver Cromwell, would silence the chapels and

churches of the country, and public musical performance and dancing would fade for a generation.

If any British institution can claim to have had a continuous influence on every facet of British culture and politics, Christ Church must be a strong candidate. Its former students have included prime ministers Peel, Gladstone, Eden and Douglas-Home. Despite the religious traditions of the College and cathedral, not every Christ Church man was an establishment figure. Quaker William Penn survived expulsion from the University and imprisonment in the Tower of London before departing for the American colonies where he made his reputation. Both Charles and John Wesley, great writers of hymns sung today throughout the world, were students prior to making their own break with the Church of England.

The extraordinary Robert Hooke, the tercentenary of whose death was commemorated in 2003, was a student before embarking on a long career as astronomer, architect, researcher into optics and author of a discourse on the Tower of Babel. An impoverished student without private means, Hooke paid his way by singing as a chorister in the cathedral. The poets Sir Philip Sidney and W. H. Auden were alumni, as were philosopher John Locke and artist and critic John Ruskin. Musicians educated at Christ Church include Sir Adrian Boult and Sir William Walton.

But to take our theme forward, let us consider the influence of two holders of the same office: Dean Aldrich and Dean Liddell. Neither is particularly famous in his own right. But both left a considerable mark on the imagination of others.

Henry Aldrich was a theologian, appointed Dean of Christ Church in 1689 as well as vice-chancellor of the University from 1692 to 1695. He designed Peckwater Quad, to the north of Tom Quad, and was involved in the growth of the University Press. But in whatever spare time he had, he was an avid writer, collector, composer and performer of *catches* – songs with which educated male company could amuse itself. Aldrich was known as ‘the divine catch maker’ a pun in the spirit of the medium, in that, while the Dean may have been a cleric as well as composer in the form, there is little divine about the results, which are overtly secular. This is the kind of vocal music which led another Dean, Jonathan Swift of Dublin, to attempt to ban the first

performance of Handel's *Messiah*, on the basis that his cathedral singers might be corrupted by the company of secular musicians. It would certainly have confirmed the worst fears of Hieronymous Bosch.

Who that should hear him in the Musick room
Wou'd think the Man of God in Christendom?
wrote a disapproving student.

By the standards of rugby songs and gangsta rap, catches are pretty harmless, and, to the extent that they contain lewdness or profanity, it is often a consequence of clever rhymes and riddles made audible by the vocal style, whereby, as in a round, different words associated with different parts of the melody end up being sung at the same time. Aldrich's circle included the royal composers John Blow and Henry Purcell, and the style epitomises the culture of intelligent liberation which followed the puritan silence of the Cromwell era.

Here is the text of one of Aldrich's rounds, which celebrates the life and sounds of his beloved college:

Hark the bonny Christ Church bells,
One, Two, Three, Four, Five, Six:
They sound so woundy great,
So wondrous sweet,
And they troll so merrily, merrily:
Hark the first and second bell
That every day at four and ten cries
Come, come, come, come, come to pray'rs
And the verger troops before the dean;
Tingle, tingle, ting
Goes the small bell at nine,
To call the beerers home,
But the de'il a man will leave his can
Till he hears the mighty Tom.

Aldrich's music captures the tone and rhythm of the different bells, reminding us of a time when the observances of the Christian offices still dictated the working day. Mighty Tom tolls out to this day each evening, an auditory link to the medieval order which gave rise to the University, and a sonic parallel to the vista of towers and gargoyles we have encountered visually.

Dean Liddell (1811-1898) was, like Aldrich, associated with Westminster School as well as Christ Church. He was a classicist and co-author of the standard Greek lexicon of his period. As an ordained minister, he was able to marry and, indeed, father an extensive family: an opportunity not open to University lecturers at the time. One of his daughters was named Alice.

Alice is reputed to have first encountered the young mathematician Charles Dodgson when she was four years old. He was photographing the cathedral with his friend Reginald Southey. This must have been a fascinating sight, since photography was in its infancy in the 1850s. The Liddell children themselves later posed for Dodgson, who repaid them with the stories which he published under the pen name Lewis Carroll.

Legend, supported by Dodgson's diary entries, has it that the germ of the *Alice* stories was a boat trip led by Dodgson for the Liddell daughters on July 4th 1862, when Alice was ten. Embarking at Folly Bridge, the party rowed upriver to Godstow where, in Dodgson's imagination, a white rabbit hurried down his hole, where he was followed by a curious little girl. From this incident developed a whole world of quirky narrative, perverse logic, linguistic play, poetry and song.

For many readers, Lewis's creations are forever associated with the illustration provided by John Tenniel. Tenniel was the leading political cartoonist and illustrator of his day, filling the pages of *Punch* with caricatures of politicians as well as depictions of the horrors of the Crimean and American Civil wars. But he was fully able to rise to the challenge of Carroll's surreal imaginings, whether depicting the Walrus and the Carpenter or the Lobster Quadrille. Songs about talking animals proliferate in the *Alice* books: and what is the Cheshire Cat but a virtual gargoye?

Like the white rabbit, we must move on. Leaving Christ Church, we pass northwards along St Aldgate's into Cornmarket Street – Oxford's concession to twentieth century tastelessness and conformity. Our next destination is the museum which bears the name of Elias Ashmole, and is the oldest institution of its kind in the world. We pass the church of St Mary Magdalen and turn left into Beaumont Street, skirting the

Randolph Hotel. Opposite is the Ashmolean, its Classical Greek façade guarded by winged creatures copied from the artefacts within.

Ashmole was a student at Oxford during the English Civil War, but did not take his degree. He was associated with Brasenose, and clearly developed an affection for the University which he later expressed in his benefaction. Like his Cambridge contemporary Newton, he was interested in the realm of knowledge which embraced both the new sciences accessible through mathematical logic, and the arcane practices of astrology and alchemy. These interests were distilled in an approach to the past that combined respect with scholarship, and led to his assembling the collection which formed the basis of the museum that commemorates him.

The Ashmolean is a relatively small museum, but it contains treasures from all over the world and several millennia of human history. A number of the objects and works of art on display have significance for the new view we are to encounter of mankind's place in the cosmos and the role of music in culture.

Amongst the earliest objects Ashmole exhibited were marble statues and inscriptions which the diarist John Evelyn urged him to rescue from the London garden of the Earl of Arundel in 1667. One of these includes the remaining section of a slab known as the Parian Chronicle. While now dreadfully faded, the carved script has been traced and translated, and gives dates for many of the important dates in Greek history, including various wars, political developments, and the achievements of writers and artists. Included in the chronology are three citations of musical events which were considered worth recording:

1506/5BC

[From when] at the time of the first Panathenaia, [Erich]thonius yoked up a chariot and showed how to race, and [gave] the Athenians [their name, and the glory] of the mother of the gods appeared in Cybele, and Hyagnis the Phrygian first invented the Phrygian flute in _____, and first played [the music c]alled Phrygian, and other styles of the Mother, of Dionysus, of Pan and _____, 1242 years, when Erychthonius, who yoked horses to a chariot, was king of Athens.

645/4BC

From when Terpander the Lesbian, son of Derdenes, [made innovations] in the conventions of [lyre playing] _____ and changed the earlier style of music, 381 years, when Dropides was archon at Athens.

510/09BC

From when choruses of men first competed, which contest Hypo[di]cus the Chalcidian won as trainer, 246 years, when Lysagoras was archon at Athens.

Charles Burney, who studied the marbles in the eighteenth century, attributed to Terpander the invention of signs for recording the relationship between words and their vocal performance.

What the chronicle describes is reflected in the artwork of the period its history recalls. In the same gallery as the Parian Chronicle are Assyrian 'Winged Genii' from c. 850 BC, and a decorated vase with Aphrodite riding on a giant swan, from Cyprus, 440 BC. Facing the Parian Marble is an urn from Sicily, dated fifth century BC, depicting a 'Nike', a winged figure playing a cithara, perhaps accompanying the young male singer painted on the opposite side. Several other urns in the same cabinet bear similar motifs. Indeed, designs of this kind are common on the pottery work of this period.

One of the beauties of this museum is that a few paces take you into a different world. Round a corner just beyond the Greek marbles is a room devoted to musical instruments. The centrepiece is the '*Messiah*' violin of Stradivarius; though as interesting to musicians will be the large Amati violas. Can an instrument look sonorous? These give an impression of immense dignity in their undeserved silence.

Another few strides, and treasures of Baroque and Renaissance painting adorn the walls, including examples of iconography which illustrate again our recurrent theme of music, flight, and the supernatural. *The Triumph of Chastity*, a painting attributed to Francesco di Giorio (c. 1470), depicts two unicorns pulling a wagon on which Chastity holds captive a winged Cupid who is attended by two putti. Ucello's *Annunciation* is a narrative painting which shows Gabriel's journey to delivery to Mary the message from God that that she is to bear His Son, the top section showing an orchestra of angels performing before the throne of the Lord.

In Vasari's *An Allegory of the Immaculate Conception* (c. 1540), putti bear Mary aloft, protecting her from the attentions of Satan. There is a painting of *St Michael subduing Satan and weighing the souls of the dead* attributed to Orsi (c. 1540). Cosimo's *The Forest Fire* (c. 1505), depicts a dramatic landscape in which some of the frenzied animals have human heads.

In the Baroque gallery, the *Immaculate Conception* by Jose Antolinez shows a familiar Spanish response to its theme, though it was completed a century prior to Tiepolo's very similar painting of 1767-9 in the Prado. It features Mary visited by a dove as symbol of the Holy Spirit, in an arrangement which has similarities to the artistic depiction of the Baptism of Christ and of Pentecost. T. S. Eliot's response to the work of the Holy Spirit seems to take its cue from this visual image:

The dove descending breaks the air
With flame of incandescent terror
Of which the tongues declare
The one discharge from sin and error.
The only hope, or else despair
Lies in the choice of pyre of pyre-
To be redeemed from fire by fire.
(Little Gidding IV)

For all its riches, the Ashmolean is only one of Oxford's museums. We need to visit two others in order to embrace the full range of influence on the story of song.

Microbes and Specimens

Turning left out of the Ashmolean and left again past St Cross College, we pass the Eagle and Child pub, where C. S. Lewis, J. R. R. Tolkien and others held their *Inklings* meetings, exchanging the stories which were to become *The Chronicles of Narnia* and *The Lord of the Rings*. Before we traverse St Giles opposite the end of St John's College, we can glance up the Woodstock Road. On the left in the distance is the original Radcliffe Infirmary building, where penicillin was first administered as an experimental treatment. Until the late nineteenth century, it was considered impossible that such small creatures as bacteria could exist. The bacillus which carried away the victims of tuberculosis, the agents of syphilis, meningitis and scarlet fever, were the real invisible enemy. But illness unexplained, even in an age of

scientific discovery, remained divine retribution, the pathology of these terrible illnesses evidence of a God who moved in mysterious ways. Amongst the greatest killers was *influenza*, the term we still use for this infection, though we now know that it is not caused by the movement of the moon and planets.

If microbes were the real devils science has since revealed, then antibiotics have proved our fallible guardian angels, created to protect the soul of the immune system. Medical science has continued the battle between good and evil, conscious of the capacity of the enemy to re-group and demand eternal vigilance. What, if for only a century or so, we have come to understand, is that we are not sinners merely because we fall ill; and that our children do not die, as Darwin feared was the fate of his beloved daughter Annie, as a consequence of our unbelief.

While medicine at Oxford has been at the forefront of microbiology, it has also been a leader in the new sciences related to the clinical examination of the human brain. At the new John Radcliffe Hospital on the fringe of the city, tools to ascertain what happens within the brain were developed during the early 1990s. The science of Functional Magnetic Resonance Imaging, which permits the diagnosis of strokes and tumours, has also accelerated the mapping of the regions of the brain so that the outcome of trauma, illness and surgery can be more accurately predicted. This is important to any account of how humans sing, in that such research is contributing to our understanding of the neurological differences between speech and song, and the role played in acquiring both by gesture, emotion and memory.

Opposite the Eagle and Child is another pub, the Lamb and Flag, behind which is a passage leading past Keble College to the Museum of Natural History. Despite its nineteenth century foundation, even Keble has gargoyles, a Gothick addition to the college's otherwise gingerbread designs in Victorian red brick. The Museum of Natural History is opposite, over Parks Road. It is a magical place full of bones and stones and, in the Pitt Rivers collection, man-made objects from each continent, including musical instruments crafted from every imaginable material. Look carefully and you can find drums made from human skulls and a flute carved from a human thighbone – one way, perhaps, of attaining musical immortality. The museum has bits of a Dodo and several objects brought back from the voyages of Captain

Cook. It holds significant collections of flora and fauna from Darwin's *Beagle* voyage.

The museum also exhibits connections to Oxford's influence on the science of geology, the discipline which underpinned Darwin's initial reflections on the relationship between species and their environment. The age of the earth itself had been calculated by the Irish Bishop James Ussher in the 1650s, using astronomical and historical evidence interpreted in the light of biblical chronology. Creation, he deduced, occurred at midnight on October 22nd, 4004 B.C. An Oxford geologist, William Buckland, the first to hold a post in the new discipline, published in 1820 a paper intending to reconcile the biblical record with new findings in the scientific study of rock formation. Buckland had to face up to the discovery of the fossil remains of long-extinct species: he published the first account of one of these giant lizard-like creatures, which he named *Megalosaurus*. To sceptics of his time, such fearsome creatures conjured images of dragons and demons. Within the same century, the smallest living creatures and the greatest ever to have lived entered the consciousness of the educated public, and became the object of speculation on the great chain of creation which linked them to one another, and both to the unique being, mankind.

Of apes and angels

It was a Cambridge man of the previous generation, William Paley, whose attempts to develop a theology of the new sciences were to have the strongest influence on the young Charles Darwin. His argument that an object as complex as a watch proves the existence of its creator provided Richard Dawkins with the title of his impressive commentary on Darwin's legacy, *The Blind Watchmaker*.

Darwin had an enormous influence on the argument on which we are about to embark. Though modest regarding his own musical accomplishments, he ran a musical household. His wife Emma was a pupil of Moscheles, and Downe House resounded to her piano-playing as much as to the singing and dancing of their children. Their cultural circle reflected the span of their interests: Francis Newman,

estranged brother of the fundamentalist John Henry Newman, exchanged ideas in which a new theology would arise informed by scientific discovery. One of Newman's papers is subtitled *An Essay towards the Natural History of the Soul*.

Darwin employed music in his experiments, testing the response to the pitched sound produced on bassoon, French horn and piano of creatures such as ants and worms. He recorded the effect on the orang-utan, Jenny, in Regent's Park Zoo, of his own performance on the mouth-organ, and valued the evidence he elicited for the animal's close relationship to the human species. His own theories of the musical origins of language play their part in the history of this debate, and their influence can be traced in the writing of major thinkers in several disciplines on both sides of the Atlantic.

Our walk around Oxford may lead us to wonder why Darwin was not employed in a University such as this. But he would have been barred from doing so, both here and at Cambridge, on two accounts. First, as a Unitarian, he was ineligible on religious grounds to hold office in institutions whose Anglican exclusivity was protected by parliament. This remained so until Gladstone's repeal of the Test Acts in 1871, when Darwin was 62. Secondly, he was married. Fellows of Cambridge colleges were required to remain unmarried until the reforms of 1875. Darwin's careful husbandry of private means allowed him to continue his scientific work, and the Universities played their part in its dissection and dissemination. But they never employed him. Even the award of an honorary degree at Cambridge in 1877 was marred by student pranks in which a monkey effigy was swung between the Senate House galleries and the Latin oration was heckled.

Oxford, though, remains the location of the events which define the reception of Darwin's ideas: the debate between Wilberforce and Huxley in 1860, following the former's hostile review of *The Origin of Species*; and Disraeli's rejection of Darwin at the meeting of the Oxford Diocesan Conference he addressed in 1864. The debate in which Huxley uttered his memorable demolition of Wilberforce took place here, in the Museum of Natural History.

Samuel Wilberforce was Bishop of Oxford. His ambitious nature and patrician meddling in politics earned him the nickname 'Soapy Sam'. He was, though, clearly

an intelligent, if manipulative, man, and this is what so irked Huxley. To capture the tone and substance of the debate, it is necessary to look closely at Wilberforce's original critique of Darwin's book.

Wilberforce clearly read *The Origin* closely, and appears to have grasped its argument and conclusions all too well. His opening remarks convey a capacity for serious critical enquiry at odds with the impression of ignorant prejudice which has come down to us:

The essay is full of Mr. Darwin's characteristic excellences, It is a most readable book; full of facts in natural history, old and new, of his collecting and of his observing; and all of these are told in his own perspicuous language, and all thrown into picturesque combinations, and all sparkle with the colours of fancy and the lights of imagination. It assumes, too, the grave proportions of a sustained argument upon a matter of the deepest interest, not to naturalists only, or even to men of science exclusively, but to every one who is interested in the history of man and of the relations of nature around him to the history and plan of creation. (Wilberforce, 1860, p. 226)

Once he goes onto the attack, though, Wilberforce's appeal to blind faith and employment of sarcasm betray a fear of continuing through reasoned, scientific argument:

To find that mosses, grasses, turnips, oaks, worms, and flies, mites and elephants, infusoria and whales, tadpoles of to-day and venerable saurians, truffles and men, are all equally the lineal descendants of the same aboriginal common ancestor, perhaps of the nucleated cell of some primaevial fungus, which alone possessed the distinguishing honour of being the 'one primordial form into which life was first breathed by the Creator' - this, to say the least of it, is no common discovery - no very expected conclusion. (ibid., p. 231)

Nonetheless, he feigns possession of the scientific ammunition to dispute Darwin's argument, as a prelude to implying that Darwin is guilty of heresy:

We cannot, therefore, consent to test the truth of natural science by the Word of Revelation. But this does not make it the less important to point out on scientific grounds scientific errors, when those errors tend to limit God's glory in creation, or to gainsay the revealed relations of that creation to Himself. To both these classes of error, though, we doubt not, quite

unintentionally on his part, we think that Mr. Darwin's speculations directly tend. (ibid., p. 257)

By the end, Wilberforce's review has left science altogether behind and taken on the trappings of the Sunday sermon – the very position he earlier promised he would not occupy:

Man's derived supremacy over the earth; man's power of articulate speech; man's gift of reason; man's free-will and responsibility; man's fall and man's redemption; the incarnation of the Eternal Son; the indwelling of the Eternal Spirit,—all are equally and utterly irreconcilable with the degrading notion of the brute origin of him who was created in the image of God, and redeemed by the Eternal Son assuming to himself his nature. (ibid., p. 258)

To all of which Wilberforce added, at the debate, his futile attempt at a *coup de grace*. There is no evidence for the oft-quoted question Soapy Sam is supposed to have asked of Huxley, as to whether he was descended from an ape on his grandfather's or grandmother's side. However, remarks were exchanged as a consequence of Wilberforce having 'been told that Professor Huxley had said that he didn't see that it mattered much to a man whether his grandfather were an ape or no!'

Huxley's answer remains a yardstick for the application of reason:

I asserted, and I repeat, that a man has no reason to be ashamed of having an ape for a grandfather. If there were an ancestor whom I should feel shame in recalling, it would rather be a man, a man of restless and versatile intellect, who, not content with an equivocal success in his own sphere of activity, plunges into scientific questions with which he had no real acquaintance, only to obscure them by an aimless rhetoric, and distract the attention of his hearers from the real point at issue by eloquent digressions and skilled appeals to religious prejudice.

Four years later, in the context of a meeting of the clergy and laity of the Diocese of Oxford assembled in the Sheldonian Theatre, Disraeli found himself needing to take sides on the same question.

Disraeli, like Heine and Mendelssohn, was a Christian convert from a traditional Jewish family. In 1864, he was 60 years old and four years from reaching 'the top of the greasy pole' as Prime Minister. But the systematic suppression of Jewish people and culture throughout Europe, fuelled by the 1855 *Essay on the Inequality of Races* by the French diplomat Comte Joseph-Arthur de Gobineau, smouldered even in a

relatively tolerant democracy such as Britain. Small wonder that Disraeli found it appropriate to distance himself from the potentially disastrous consequences of espousing Darwin:

What is the question now placed before society with the glib assurance which to me is most astonishing? That question is this: Is man an ape or an angel? I, my lord, I am on the side of the angels. I repudiate with indignation and abhorrence those new fangled theories. (Speech, 25 Nov. 1864, Diocesan Conference, Oxford).

The cartoonist Tenniel, whose images of *Alice* we have already noted, was especially keen to ensure that his readership was made aware of the semitic features of their leading Tory politician. His response to the Oxford speech was to depict Disraeli as a fancy-dress angel in a cartoon entitled *Dressing for an Oxford Bal Masque*. In another cartoon in *Punch*, Disraeli was figured as presiding over "Fagin's Political School." In 'Moses in Egypt', Disraeli is shown with his finger to his nose hushing a winking Sphinx after the Suez Canal deal. The shares in the canal company were acquired with a loan from the international banking of the Rothschilds. In *Paradise and the Peri*, Disraeli is shown as a flying angel, celebrating the achievement of election to his second ministry in 1874.

In the context of the dominant culture – Anglican, aristocratic, land-owning – to be a Jew, a Unitarian or a scientist was to deserve exclusion from the clubs and circles in which the ruling class held on both to power and control of belief. Given the Race Relations legislation in England a century on, the country which elected Disraeli would have outlawed these images. But not in his own day. Just as the Prime Minister could be depicted in cartoons as aspiring to be an angel, other cartoons of the period employed a similar iconography to depict the difference between ‘civilised’ and ‘uncivilised’ peoples within the context of the evolutionary agenda. White people approximated to angels, black to apes.

Books and Tablets

Leaving the Museum of Natural History and turning left into Parks Road, our walk takes us towards one of the most remarkable clusters of buildings in Oxford. At the next corner, the compact, rounded form of the Sheldonian Theatre is straight ahead, while to the left is the King’s Arms pub. Along the road back towards the High Street

at Hertford College is New College Lane, spanned by the 'Bridge of Sighs', with its decoration of putti/cherubim. On the right at the crossroads is the Bodleian Library, while tucked away on the opposite side of Broad Street is the Museum of the History of Science. Let's look at the Bodleian first.

Amongst the wealth of material collected here in one of the world's greatest libraries is an archive of particular relevance to our theme, the collection of works written or published for children by Iona and Peter Mason Opie (1918-1982), together with their original sources. As the citation tells us:

The material is mainly British, totalling c. 20,000 items, put together from the mid 1940s to the early 1980s as a private research resource, rich in terms of rarity and deep in terms of quantity of variant editions, ranging in date from the 16th to the 20th century, including c. 800 18th century books.

The Opies pioneered the classification and historic analysis of the transmission of children's singing games, and Iona Opie continued her research into 'the people in the playground' after her husband Peter's death.

The Bodleian also has rare copies of the translation into English by William Brouncker of Descartes's early treatise on music. Like many mathematicians of his period and the subsequent century, Descartes had followed medieval practice by cutting his teeth on scientific speculation regarding the phenomenon of sound. Brouncker, a founding member of the Royal Society with Hooke, Pepys, Wren and Newton, presented Descartes' ideas to his colleagues in their own language.

An even stranger and rarer object is to be found in the Museum of the History of Science. Just to the left inside the entrance is an object of chilling fascination, once a possession of Elias Ashmole himself. It is a marble slab covered in the arcane geometrical shapes and hieroglyphs of the astrologer. This *Holy Table* is no less than a means of translating the language of the biblical angels, as revealed to the medium Edward Kelley and recorded by the philosopher and alchemist John Dee. Only a generation or so before the scientific revolution of Hooke and Newton, the cream of Oxford's mathematicians sought to exploit and extend their knowledge by communicating with the spirit world.

Quires and places where they sing

Some paces to the east of the cabinet containing John Dee's stone babelfish is the Sheldonian Theatre itself. Gilbert Sheldon, Archbishop of Canterbury and subsequently Chancellor of the University, commissioned the building from Sir Christopher Wren, and it was completed in 1668. The ceiling represents one of Wren's engineering triumphs: an unsupported area of 526 square metres decorated with a painting representing the victory of Religion, Arts and Science over Envy, Hatred and Malice. Perhaps Sam Wilberforce should have taken note of this design.

The Sheldonian is principally associated with the ceremonial functions of the University as the venue for graduations and the election of officers. Its unusual shape suits musical performance well. While the seating in the upper floors is somewhat vertiginous, a large audience can feel close to performers within its amphitheatre dimensions. And the acoustics are warm though not reverberant. These properties were exploited within a generation of the building's completion. Handels's oratorio *Athalia* has its first performance here in 1733, and several other works of his received early performances in the Sheldonian after their premiers in London.

In June, 1920, the Oxford Bach Choir tackled Elgar's *Dream of Gerontius* in the Sheldonian, some 20 years after its premiere. Why did it take so long for so successful a work to find its way to the city of Newman, whose poem inspired Elgar's oratorio? If this were the first performance of *Gerontius* in Oxford, perhaps the delay is due to the work's Catholic associations. The Anglican prejudices of the dominant University culture died hard, as illustrated in a conversation that Sir Hubert Parry is reported as having with Sir Charles Villiers Stanford after an early performance of *Gerontius*. One remarked, "It stinks of incense"; to which the other replied, "Oh, no, it doesn't. It just stinks". The Bach Choir made amends in the work's centenary year, featuring the work prominently in their 2000 season.

However long *Gerontius* took to win the hearts of Oxford performers and audiences, the oratorio represents many of the elements which we have noted as themes in considering the subject matter of human song. The work is divided into two parts. In

the first, the title character is close to death, and his soul is prayed over by the chorus and a priest. The second part depicts Gerontius's journey beyond the grave. He is guided by an angel, encounters mocking demons and the purgatorial attentions of the Angel of the Agony, before failing in his final trial to gaze on God Himself. Nevertheless, he is welcomed by the heavenly host.

Whatever Newman's intentions in the original poem, Elgar's music is shot through with references to earlier works which deal with parallel subjects. The Faust legend comes to mind, especially in Goethe's version (set by Berlioz, Gounod and Mahler), in which Faust's soul is permitted entry to heaven by the embodiment of female love. But Wagner's *Tristan* and *Parsifal* also perfume the texture and harmony. The 'good' and 'bad' angels mirror the immaculate and the penitent Marys: while the Angel of the Agony is introduced with harmony drawn directly from the ambiguous, yearning chords associate with the opening of *Tristan and Isolde*, the good Angel's final farewell recalls in its contours and serenity Isolde's *Liebestod*.

The use of the chorus in Elgar's oratorio defines a similar duality. The final passages, as in Berlioz's *Damnation of Faust*, conform comfortingly to the traditional allure of a sublime heaven. The composer, by his own admission, had more fun with the Demons' choruses, in which a sociology of injured rejection is conveyed through the scholarly irony of the traditional fugue:

Dispossessed,
Aside thrust,
Chuck'd down,
By the sheer might
Of a despot's will.

These are Lucifer's hordes, as met in Milton's epic. But their argument is that of any downtrodden masses denied representation or respect. Their place in *Gerontius* is not merely the equivalent of Fagin's gang or the workers of Blake's dark, satanic mills. One suspects that Elgar, the religious composer from the minority denomination, relished the opportunity to set their complaint, as in the demons' comment on those who hope for a favourable afterlife:

Low-born clods of brute earth,
They aspire to become gods!

For those rejected by the dominant culture of the Church of England and its stranglehold on appointments sanctioned by the state, academic or political preferment could be dismissed in similar manner.

Turning right in front of the Sheldonian, we can walk into Holywell Street on the way to our destination in New College. On the left is the Holywell Music Room, designated the oldest building of its kind in Europe. It was designed by the Rev Dr Thomas Camplin, at that time Vice-Principal of St Edmund Hall, and opened in July 1748. Despite its purpose as a venue for musical performance, it is redolent of church or temple in its proportions. Nevertheless, it takes its place alongside historic spaces where human craft has determined that music was meant to be heard, such as in the caves at Lascaux, the dwellings of Catal Huyuk, the great medieval cathedrals, and the opera houses of the nineteenth century.

Our walk around Oxford has come almost full circle. To the left from Holywell Street we can reach the extraordinary range of the university's scientific laboratories, in one of which Dorothy Hodgkin advanced the study of molecular chemistry through her work on X-ray crystallography. Further along towards Magdalen, where we started, is the Department of Experimental Psychology where Professor Robin Dunbar has his office. Robin modelled the relationship between the developing size of the primate and hominin brain and the capacity for interaction with ever larger groups of conspecifics, giving rise to the 'From grooming to gossip' theory for the emergence of language. His Social Brain theory accounts equally for music and its enhanced capacity for conferring well-being through collective participation.

Music, memes, and 'Just So Stories'

New College is, of course, one of Oxford's oldest, and within its range of extensive buildings of every architectural period are examples of the most weathered medieval longevity. The College, the first in Oxford to admit undergraduates, was built over a plague pit, its purpose to train new priests to replace those lost during the Black Death of 1348. The site is a large one – on the south side of New College facing the back of

Queens, is a wing near to the beginning of our walk. It has a row of gargoyles representing a varied bestiary which includes a group of nesting harvest mice, a giant crab, a dolphin, and a family of woolly monkeys.

These visual fantasies complement the linguistic eccentricities of the famous Rev. William Spooner, after whom is named the trick of exchanging the initial consonant of pairs of words. His own famous 'spoonerisms' include: 'hissing all my Mystery lectures and tasting two whole worms', and the toast 'three cheers for our queer old Dean'. Spoonerisms and malapropisms, named after the character from Sheridan's 1775 play *The Rivals*, provide a common insight into the mental working of language. In malapropism, the brain seeks a word which sound like the one whose meaning we have in mind. It happens to many of us all the time. Mrs Malaprop's descriptions of her acquaintances epitomise this quirk: "She's as headstrong as an allegory on the banks of the Nile"; and "He is the very pineapple of politeness". Emails circulate widely of similar infelicities in the speeches of George W. Bush, Dan Quayle and John Prescott. A new generation of the phenomenon has been born with the arrival of the unedited anticipatory spellcheck, one's phone unerringly committing the most Freudian of slips.

Spoonerisms and malapropisms remind us that, for all our intentions to deliver clear, unambiguous utterance, we depend on speech production in which the sonic elements have a neurological life of their own. Children learn language by playing with these elements, in tongue-twisters and in expressions such as *topsy-turvy* and *easy-peasy*. *Hurdy-Gurdy*, *hocus-pocus*, *pell mell* are meaningful expressions uttered in this childlike way. Lewis Carroll gave to the similarly-named Humpty-Dumpty the proclamation: 'When I use a word ... it means just what I choose it to mean -- neither more nor less.' These aspects of speech give an insight into the processes by which we distinguish, recall and articulate words, and the similarities and differences encountered, by comparison, when singing wordlessly. Certain language disorders de-couple these functions so that it is difficult to perform language accurately, but this was little understood in the nineteenth century. The Rev. Spooner himself may well have been innocent of the intention to produce the strange sayings which have amused us since.

New College Chapel is a fine building with 14th century stained glass and a renowned musical tradition. The east wall behind the altar has a floor-to-ceiling chorus of saintly statues, each in its individual niche.

We have come to New College to consider the influence on our argument of two celebrated biologists: the late W. D. Hamilton; and his disciple and interpreter, Professor Richard Dawkins. Both rank amongst Darwin's leading advocates in our own time. Hamilton's work took on the challenge of revealing the mechanism of altruism whereby members of a species cooperate to ensure collective reproduction. Nature red in tooth and claw, not least that of our own species, would appear to militate against such 'selfless' endeavours. But Hamilton's work has laid the foundations for theories of group selection that have become influential in accounting for the evolution of behaviour.

Dawkins has helped provide the key to understanding how evolutionary mechanisms could have given rise to language and culture. His contribution has been to extend the arguments originally forged by Darwin to overthrow the prevailing view, based on the theory of Jean-Baptiste Lamarck, that attributes developed within a lifetime could be inherited. For instance, the son of a blacksmith does not have powerful arms as a consequence of the work his father does: he inherits the characteristics that fitted his father to choose to earn a living hammering metal. Dawkins argues a sober examination of the application of Lamarckian assumptions in culture as much as in anatomy, warning against belief in 'Just So Stories', as in the accounts of animal characteristics devised for children by Rudyard Kipling. An account of the origins of music in our species will exploit tools which Dawkins has shaped and made accessible. But there is an irony to this which will also need to be taken into account in developing a model for how human beings became musical, and the role this played in the survival of our species. Many of the allusions made in our walk around Oxford to the power of music, and its associations in a variety of cultures, have involved religious functions and spiritual experience. Yet Dawkins is militantly atheist, the Huxley of our age, ever ready to demolish the tissue of solipsism and prejudice with which he is assaulted by the ranks of contemporary Soapy Sams.

But Richard Dawkins was once a guest on BBC Radio's *Desert Island Discs*. One of his choices was the 'In Paradisum' from Fauré's *Requiem*, sung by the choir of New

College. Here is a piece of religious music, the text of which, as in Elgar's *Gerontius*, tells of an afterlife in which Dawkins explains to us eloquently he cannot believe. And yet he chooses to listen to music about it, just as the Danish physicist Nils Bohr, when asked why he had mounted a lucky horse-shoe over his fireplace, replied 'just in case'.

The point is not that listening to religious music gives evidence of a dormant faith – far from it. What Fauré does for Dawkins is to provide an insight into the capacity for spirituality which resides in the act of performance, and in the medium of music itself. The heaven we hear in this is within the music, not in that which it describes: and the music is, evolutionarily, in us all.

Dawkins's writing about adaptation and the evolution of living organisms encounters the same hostility as Darwin struggled with 150 years ago. The reception of Darwin's influence has become more widespread, certainly. It is now time to think through fully the ideas about the musical origins of human communication which so interested him, despite his own avowed lack of musical ability. But this field has been beset with heresies and misinterpretations of its own, which serve to confuse the picture. In revisiting ideas Darwin himself expressed in the late nineteenth century, and tracing the process by which they have been rejected, extended, ignored, refuted and developed, our argument needs to be both systematic and temperate.

Our walk around Oxford has, then, been an overture, the themes of which have prepared us to experience the more complex plot which follows. We have met some of the characters with whose work and influence we need to be familiar. Above all, we have been introduced to the signs that music relates to a great many aspects of human thought and experience, rather than being the passive luxury which many people experience today. To study the role of music in human experience is to enter a world of connections with every aspect of human achievement. In considering the working of music in the human mind, we will illustrate that it is both one of the most complex tasks of simultaneous neural processing of which we are capable, and also one of the earliest to which each of us responds most naturally, even in the womb. The story of our species is one in which music has played an inseparable and unrecognised part.

PICTURE INCLUSIONS

William Blake

Gustave Doré

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