

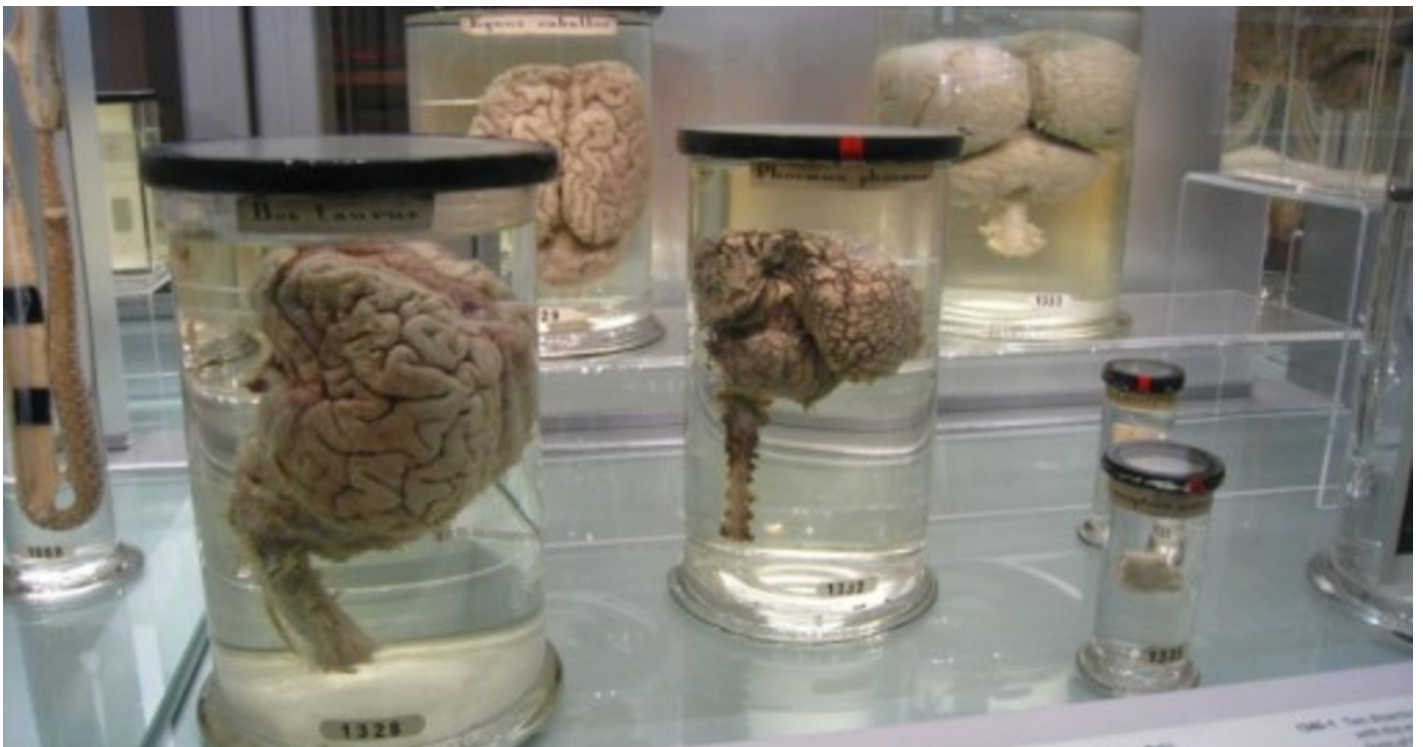


GRESHAM COLLEGE
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Anatomy Museums: Past, Present and Future Transcript

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26 SEPTEMBER 2012

**ANATOMY MUSEUMS:
PAST, PRESENT AND FUTURE**

PROFESSOR WILLIAM AYLIFFE

It is absolutely wonderful for me to stand back in this hall after so many years, where we were terrified as students, being handed pots, randomly it seemed, from the wall, asking to explain what the organ was and what the pathology was within that organ. Those days, we thought, had past, but then, with revalidation, I was in here four years ago, with the GMC, where similar things were passed to me as a guinea pig to see what was going to happen with revalidation - and what that has to do with ophthalmology, I have absolutely no idea, but I am sure I shall be a safer one, nevertheless.

Anatomy museums, such as this, are becoming quite a rare species, and more in particular, the access of the general public to such collections has been limited. There have been a number of changes recently in that, including the Royal College of Surgeons, who have just recently changed their access policy to their museum, and it has been refurbished and I urge you to have a look at that collection, which is open to the general public. But this collection is somehow more important because this reflects the diseases and pathology and the generosity and bravery of generations of surgeons and patients who have been in this Hospital since the days of Paget, and, in this collection, we have, for example, the oldest example of an industrial disease in the world, and this dates from the 1700s and is the cancer of the scrotum in the chimney sweep, who was sent up the chimneys. This is of amazingly important sociological value.

What else did these museums do, apart from teaching doctors? Well, they had a number of functions. They were also collections of comparative anatomy and also collections of disease, to try and work out why people might have died young.

There are many people, as usual, to thank, including my colleagues and my patients.

These museums are scattered all over Europe and America and China and Australia, and I have managed to visit most of the important collections to put this together for you tonight. Now, the human body has always been considered shocking. Even the naked human body can, at times, be considered shocking, as we have seen recently from photographs of a particular royal person, and it creates tremendous debate. The insides of a naked body are perhaps even more shocking, so, if you are shocked by insides of bodies, now might be the time to leave and have a rather large sandwich over the road in Smithfield, where you can look at the insides of our cousins, cows, being dissected, which seems somehow to be less horrible, although they smell precisely the same.

There is another anniversary that we are failing to realise here. This was the 200th anniversary of the assassination of the British Prime Minister. It is not being recommended, it is not being celebrated, although, my American colleagues tells me, a rather disappointingly low number, however, about six months earlier than this date, in 1812, in the Lobby of the Houses of Parliament, a well-dressed Liverpool merchant stepped forward and pulled out of his pocket, which was a new invention, a pistol, with which he shot the Prime Minister, Perceval, dead, in the chest. Perceval was carried away. Bellingham sat in the corner, was immediately arrested and willingly went off to prison, and he was incarcerated just down the road here, in Newgate Prison. Within three days, he was tried and sentenced to death.

The circumstances surrounding this are very interesting and they are relevant to today. In 1803, a Russian ship, the *Soleure*, had sunk in the White Sea, and the insurance money was not paid out because of an anonymous letter that suggested fraud. At that time, John Bellingham was working in Russia, and the owners of the ship put the blame on him for sending the letter, where he was promptly arrested by the czarist troops and put into a jail. He asked for help. He did not get it. They eventually released him, but by this time, he was so much in debt, he already owed 2,000 rubles, that he was put in prison again, this time in a debtors' prison. Eventually, he was released, and returned and set up business in Liverpool, where he constantly petitions the Government, in particular the Chancellor of the Exchequer, Perceval. He has no reply at all, and he says, "This is the only recourse I have now," was to call him, and this is Bellingham's last statement. He says: "Recollect that my family was ruined and myself destroyed, merely because it was Mr Perceval's pleasure that justice should not be granted. I trust this serious lesson will operate as a warning to all future Ministers and they will henceforth do the thing that is right, for if the upper ranks of society are permitted to act wrong with impunity, the inferior ramifications will soon be wholly corrupted." This is a lesson for 2012 as much as it was for 1812.

The Justice of the day, Mansfield, says: "It only now remains for me to pass the dreadful sentence of the law, which is that you shall be taken from hence to the place from whence you came, Newgate Prison, and from thence to a place of execution, where you shall be hanged by the neck until you are dead and your body shall be dissected and anatomised."

On the Monday morning, on the eighteenth of May, he was brought out of the window on the left-hand side of Newgate Jail, now demolished, but built by the same architect who built the hospital grounds you see outside you here. It is a rather good industrial sort of factory really. You can see, you have got justice, you have got the prison, and you have got the place for dissection over here afterwards, so it was all working rather efficiently.

Byron had bought tickets to come down and had rented the house opposite, and one of those figures will be Byron looking out, and he had a bad incident the night before, but, nevertheless, he watched Bellingham drop down as far as his knees. The most perfect and awful silence prevailed. People realised there had been a miscarriage of justice, so much so that they had placards going round the streets saying "Do not come to watch this execution", like the Olympic Games - "Do not come to the Olympic Games, it is dangerous". And remember, when Paul Hegarty was hanged, how many people were killed - 30 people were squashed to death, so do not come in, and furthermore, they put armed troops around in Islington and over on Blackfriars Bridge.

It was witnessed by a Frenchman at the time, who says: "Farewell, poor man. We owe satisfaction to the laws of your country, but God bless you - you have rendered important service to your country".

One hour later, he was cut down and immediately transported by cart, followed by throngs of what they euphemistically called "the lower classes" to the hall of this Hospital, where he was taken inside and dissected.

There are two things that are of relevance today. One is that Henry Bellingham, who, until the shake-up in the Cabinet, was the Under-Secretary for State. He was descended from Bellingham and he was elected the MP to North West Norfolk, but he lost this seat in 1997, and this was attributed to the votes that were given to the Referendum Party candidate, Roger.

Why have I brought up this story? Why is it relevant? Well, you understand now how dissection was occurring and you can understand the processes. We can see Bellingham's skull, here, which was kept not only as a terrible memento to his family to warn them not to interfere with people in power again, but furthermore, that people may study the criminal mind and understand what made him go mad. It is number 22. It is the only one of these remaining in this Museum, but one can imagine a vast collection, and some of these vast collections still exist, and I will show you some of those.

There are stories about dissection and why it was banned or not banned and so on. It was a very uncomfortable thing in the ancient world, and part of this was the attitude to the dead body, which was considered to be unclean, and, furthermore, the people who touched the dead body were unclean, and they were usually the women of the house and had to go through a very complex purification process that, for the primary attendant, could last several weeks. We can see echoes of this in the Sophocles play when Antigone, the sister, finds the body of her brother, who was forbidden to be buried by the king.

We can also see other examples of this in the laws. In Alexandria, there was a small period of a renaissance where human bodies not only were allowed to be dissected, they were encouraged to be dissected, and one of the punishments was to be dissected alive. Live dissections were performed by Herophilus. He was a contemporary of Euclid. Then he was joined by Erasistratus, who was one of the greatest surgeons of his day, who, in Syria, had made his name by diagnosing the illness of the Princess and the Prince, and the illness was that the Prince had fallen in love with the King's new wife. He could not exactly say that because he had been in trouble, so he said "She has fallen in love with my wife," and the King said, "Well, let him have her". He said, "Yes, but would you say the same if it was your wife?" He said, "Obviously, I would do." He said, "Well, actually, it is your wife!" So, he did actually pass his wife on to his son. It was about his eighth or tenth wife, so it was not incest, and not only that, gave him whole heaps of Persia to run as well. So, it was a happy story in the long run, but actually made the doctor's name, and he arrives to work in this area. Now, where he originally comes from, there are still in existence the stele with the carved laws pertaining to the dead body, so we know that in the Ancient Greek world - we have the laws, 37 of them, written on this stele alone, and various other fragments. We know that it was not a good thing to do.

Now, however, it was not - the Galenic teaching that comes therefore afterwards is not based on human dissection, so it is just this one small period. It occurs in this one small area because it is not a democracy. Everywhere else in Greece is a democracy, which means that your mate, if he does not like you or gets jealous of you, can denounce you and you can end up in the galleys or worse - a fate worse than a fate worse than death. But in Alexandria, which is run by the Ptolemies, which is a fascist state, they are allowed to flourish because no one is going to complain about them, particularly if it is by royal decree. Things change again, of course, Alexandria falls, it is burnt, and then the Galenic teaching, the remains of this Greek teaching, is all that is left, and it is based on animal dissections and is often wrong.

There is a little renaissance starts in the 1000s, in Salerno, where Constantine the African translates various texts from Arabic and some from Greece, and this was the sole source of anatomical knowledge for the next century, until some copies of some English and French anatomies start to come into the university, and then, in the twelfth century, there is a dissection of the pig, which was the first of the Salernitan Demonstrations, and they become famous, where post-mortems or executions, where a man is executed by drowning, and this is the drawing, the anatomisation of that particular execution. There are interesting features here. We can see it is

based very much on Galen, and it is fairly rudimentary. There is some attempt to draw some of the anatomy of the brain.

And here is a stylised picture, of what the Salernitan University might have looked like, and a contemporary painting showing a post-mortem or dissection, which is actually illustrated as the dissection of mother Agrippina, which the Roman Emperor of course insisted because he wanted to see from whence he had come.

There is a story that the Church were anti-dissection, and this stems from the Papal Bull of 1300, and this was brought into action partly by the fact – we have met St Louis before, in one of my previous lectures, and remember, he died of the bloody flux at Tunis. Being a saintly king, they wanted him not to be buried on Muslim soil, so they boiled him up, in the German fashion, the *mos teutonicus*, and sent off the remaining clean bones back to Europe, where he was buried. This was considered to be a bad thing, and eventually, a Papal Bull was given, by Pope Boniface, and he then said, in 1300, “You must not do this, and if you do this, I shall excommunicate you.” Now, some people have chosen to interpret that as saying this is a ban on dissection. It is not. It is a ban on the *mos teutonicus* and specifically so.

Pope Innocent, in fact, much later, orders an autopsy of a suspicious death. We know the Popes are not anti-dissection or anti-autopsy. The University of Bologna, William of [Soletum], he autopsied a nephew. All of this was done in Church institutions, subsidised by the Church, promoted by the Church, sometimes on the orders of the Church, and sometimes with the full knowledge of the Pope. Some of them, the Popes, had actually trained in medical famous museums.

Mondino de Luzzi, we see a picture of him here, supervising the dissection of an executed criminal, whilst he reads from the book, explaining to the assembled students. He was rather unusual for his time because he was one of those few people, along with Vesalius, who did the dissections themselves.

There was an anatomy in England that was a side anatomy, and this was the anatomy that was developed by the barber surgeons who attended the armies in the Hundred Years War, where appalling injuries, including bisections of heads from these war swords and war axes, were occurring. Now, of course, the surgeons, they were not able to put this back together again, but they were very well-trained in observation, and these are some of the contemporary drawings, done by an English surgeon of that time.

Guy de Chauliac is also involved with this and also performs dissections. He says, “A surgeon who does not know his anatomy is like a blind man carving a log.” He makes attendance at dissections obligatory for all medical students and writes a book. We know the Popes condoned this because he was the personal physician to three Popes when they moved to Avignon, and those of you who have been lucky enough to go there, this is the beautiful Papal Palace, which was built to house one little room in the middle. If you lift up the stones in it, there is a little vault, which is, originally, full of all the gold, and that is what that was for.

Sixtus IV was one of those who had been educated at the University of Padua. We know that this is a famous medical school. In fact, this is the first anatomical and pathology museum in the world, and there is a model of it. This was built in 1446.

Later versions in Italian universities still exist, and this is the Bologna, with the re-facing, in the 1600s, and Leiden, which was here.

The next one in this sequence was the one in the barber surgeons, and that was built by Inigo Jones and was an amazing piece of architecture, and its demolition and destruction was absolutely an offence at all levels.

The only thing about these places, and you might notice that if ever you go to King’s College for a lecture in the old Anatomy Museum, it has not been an Anatomy Museum for 30 years, but it still smells of dead bodies, and it is extraordinary – you cannot get the reek of this out. Anybody – I was an anatomy demonstrator, and you do not have girlfriends if you are an anatomy demonstrator because you smell of dead bodies and you cannot get it out. You cannot wash it out. It takes a year to get the smell of dead bodies out of your clothes, out of your skin, out of your hair. We will come to that, because, before they actually preserve dead bodies, the medical students were renowned for stinking and used to hang around the corner, just over here, completely drunk, creating mayhem of various sorts. This has now been banned by modern education in the last five years, and we remain to see what sort of doctors it produces with the new correct version of training medical students. They don’t do Anatomy anymore, you see, so this helps them. When you are carving into dead bodies, you have to have a distance and you have to learn that distance. It does not come naturally, and it is a training, and it is a deliberate training to brutalise you, so that whenever you next see someone who is not dead, who is lying on the ground with a bone sticking out and the blood’s pouring out, you do not immediately go “Ahhh!”. You immediately switch into that dispassionate mode and get on with the job you are paid and trained to do. Not all people can get through that process, and many people leave early. We will see some examples later on.

Michael Servetus is put forward, actually very recently, by Mitt Romney, as being an example of why the Catholic Church was retrograde and a bad thing, meaning also that Mexicans are retrograde and a bad thing as well, but that is another story because they are going to vote for the other Party.

The story with Michael Servetus, he was extraordinary mad; he was mad even in a mad world, and mad even by the standards of his day - this guy was barking! He studies with Vesalius in Paris, and goes round with him digging up dead bodies to actually practise on. He reads the Koran and works out that Jesus was a human, so he is not a God. This is not a good thing to say even today, and it certainly was not a good thing to say in those days. Then, with reading the Greek in its original, he works out that the Trinity is a sham, created not by the writers of the Gospels, but by Greek philosophy. Now, that is fine, you can think those things, but what makes you mad is you go and tell people those things, and you tell religious people those things, and one of the ones you go and tell is Calvin.

Now, Calvin is not a Catholic, but he is pretty mad, even by the standards of the day, as well, and he is also not known to be a terribly nice person, and he detested this and said that, "If Servetus ever comes here, I will never permit him to depart alive." Now, Servetus passes through, he is actually quite a good doctor, and becomes Physician to the Archbishop of Vienne, writes a few books, includes his discovery of the circulation of the pulmonary into the lungs, and sends a copy of it to John Calvin. Now, unfortunately, John Calvin immediately passes this on to the Catholic hierarchy - extraordinary this, is it not? They are at war with each other. If Calvin sets foot in the city, he is going to be burnt alive, but yet wants to help...my enemy's enemy is my best friend. So, he sends the book off, and then poor old Servetus is then arrested by the Catholic authorities - but not for anatomising and not for dissecting and not for his theory of the blood flow through the lung and then passing it through. He is actually put in prison because he does not believe in anything anyone else believes in: does not believe in God; does not believe Jesus was a God; does not believe in the Trinity - and a host of other things as well, which I cannot tell you about because I have not got time. But nevertheless, he escapes, and what does he do? He escapes off to his old friend John Calvin, who has been so nice to him all these years and sent the book and so on, where he is promptly arrested and Calvin has him burnt at the stake.

During this time in Spain - Servetus was Spanish - we know that the Spanish authorities, who were Catholic, were not anti-dissection. They were anti-English, and we will show you some examples of what they did to English sailors if they got hold of them later on.

This is the site of the first public dissection of anatomy in Spain, 1402, and it says, at the bottom here, this was done by special privilege of the Pope, and this was one of the original medical schools, and there is the beautiful church of Guadalupe behind, and this is the courtyard where the anatomy dissection took place.

We know that people working in the Catholic Church were very familiar with anatomy because we can look at things in their churches. There is nothing anatomically incorrect about this head of John the Baptist. There are beautiful things about it, the beautiful polychrome painting, the fantastically realistic effect of the severed arteries, the windpipe, the veins, the spinal cord. I do not know if any of you saw that wonderful exhibition on sacred art some years ago. They are so amazing, these images, that even 300 years later, you have to stand back and say there is something real about these.

Now, the Surgeons' Guild, here, 1540, the barbers amalgamate. This is the famous painting, which actually is of interest to me because the person second on the right here is Sir John Ayliffe, my ancestor, who was a surgeon in this very Hospital, and in the Great Hall, there is a little plaque there where he paid off his bar bills for a few pounds in the 1400s/1500s.

The importance of this was dissection got licensed. Henry VIII gave these guys four corpses a year from the execution block, so this is now state-sanctioned. There is a little thing happening here which is telling me something, that it is not a good idea to be dissected if you are a Christian and you believe you have got to go to heaven and be resurrected and you have got to come out of the ground and you have got to look like one of those medieval paintings - i.e. pretty much intact, with all the bones joined up, because, if you do not, and some of your bones are in different places, this is not a good thing. So, we are starting to link in dissection with punishment, and this is going to be a theme that is going to come later on.

But anatomy becomes important for training, very important for training. Thomas Vickery, Surgeon to Bart's, after my ancestor, who was actually surgeon to his father as well as to Henry VIII, and he starts anatomy. John Caius, of Caius College Cambridge, he becomes Reader in Anatomy. Inigo Jones, he builds the structure that we are telling you about.

Here is John Banister, lecturing in the Hall, and we can identify the people here, we can identify the book that he is reading from - it is Realdo Colombo. He was the successor to Vesalius at Padua. See the white sleeves...which are to protect them. We have got the dissectors here, and the assistants, all wearing the white sleeves to protect them from the putrid emanations from these corpses.

Leonardo da Vinci of course was a famous dissector and a beautiful anatomist, and really, his pictures here are some of the most beautiful pictures that we can imagine. This is a copy because the original painting of the Battle of Anghiari is now lost. It was on the side wall of the Palazzo Vecchio, now the Palazzo della Signoria, in Florence. It shows an amazing knowledge of anatomy. Now, he did not get it all right. He still believed in the ventricular function of the brain, as you can see, the three ventricles here, which was an ancient medieval throwback. But

when he got onto the muscles, the joints and bits of the heart, he was second to none, and he dissected 30 bodies one winter, in association with the local professor of anatomy.

Unfortunately, Milan descends into war. It is invaded by the French and various other people, the Swiss Guards and so on. Plague follows war. His friend dies. He has to leave, and then, from then on, he is only able to dissect animals.

This knowledge was completely lost to science for hundreds and hundreds of years, and only became analysed in the twentieth century, and nobody knew this knowledge was there. No folio was made, no books were written. That job was done slightly later, by this guy, Andreas Vesalius, who became the most famous anatomist of his day.

Here he is dissecting in public, and is what public dissections were – everyone was crowding in to have a look. It must have been appalling at the time. He has various assistants on the other side.

He was not always right, because things rotted, and that is what he thought the human brain looks like, and of course it does not. That looks like the picture that was saw from Salerno in 1180 – it is not really advanced in the 500 years, until this is done.

A contemporary anatomist, who was accused of plagiarism by Vesalius – they really did not like each other at all, and in fact, he was denounced as saying this is a man who has done hardly any dissections at all, and all he has done is to steal my drawings. However, he did a couple of things, and he did improve Vesalius' anatomy in a few cases.

Here is a picture of the flayed corpse holding its skin. This is an important anatomical drawing because, if we look at the Sistine Chapel here, we see St Bartholomew – and it is important to remember which Hospital we are now standing in – holding his flayed skin. He trained with Michelangelo. So, plagiarism and copying and things merge in this period, and produce some amazing things.

The painting of course, which is done by Michelangelo, is criticised by Biagio da Cesena, who is working for the Pope, and says this is terrible – this painting should only be seen in a brothel or in a bar because it depicted naked people. So, Michelangelo adds in this at the bottom here, and this is an image of Minos, who is the judge of the dead, but actually, it has got the face of Biagio on it and it has a snake wrapped round it which is biting his genitals, which is his response to this criticism that he had.

Later on, this painting was badly damaged by having fig-leaves painted, and has recently had part of them restored, because, as I have said before, people find the naked body scary, but they find the naked female body dangerous, and they find dissected bodies appalling.

This is Milan Cathedral, where the European Cataract Meeting was held two weeks ago, and as you can see, I was busy learning how to take cataracts out, as I wandered around something slightly more interesting, for your benefit tonight, and this is a similar picture of St Bartholomew, but a statue this image, with him with his draped skin over his body. So, it was not all completely wasted, the meeting, you will be pleased to hear.

These skinned figures, called *écorché* figures, which comes from the old French which means “to flay”, actually turns out to be really common. Ligier Richier is very famous, and he does them both in lime-wood and in stone and he does them all in Lorraine.

There is one here in Dijon, which is in stone, showing reasonably sophisticated anatomical knowledge of the time. These people knew what the inside of bodies looked like.

And the founder of Lincoln College. Here he is in life, and here he is rotting away, showing his anatomy and his corpse at the bottom. “Once I was a clever boy, learning the arts of Oxford.” Richard Fleming. He goes on to found Lincoln College.

These figures which have the skin taken off them become incredibly important, not just for doctors and learning how to be a surgeon. They were important for artists, as we mentioned with Leonardo, who had done it all himself, but that was a private knowledge just for Leonardo, never went to anyone else. So, some of these figures come out and they are made into plaster casts, and they are used to teach artists and sculptors how to clearly depict the body.

There were other uses as well. Here are sculptures, beautiful anatomical sculptures that are present in this particular small chapel that was founded on the basis of a miracle of a condemned man in chains, and the wall of the palace fell down and he saw an image of the Madonna, and he said, “I will build a chapel here if ever I am released and not put into the galleys.” He was eventually found to be innocent and builds the small chapel, which becomes a place of pilgrimage because one of the Counts is actually cured of a mysterious illness when the Madonna appears to him and so on.

But this is a rather complicated family, because, eventually, Raimondo takes over, and he is called the Sorcerer Prince. Now, his family of course goes back – their family home had the awful legend, the truth actually, it was not a legend, the awful story, of where the composer Carlo Gesualdo catches his wife in delicto flagrante with the local Duke, and instead of saying, “I am terribly sorry, Duke – you know, just carry on, and I will come back in a few minutes and I will knock next time,” he actually hacks them to death in their beds, and then he displays the mutilated corpses at the front of the house for all to see, with the lover dressed in his wife’s clothes to further humiliate them. I mean, they were clearly mad – you know, 500 years of inbreeding leads to problems like this. And Raimondo was tarred with this same brush, although he was not mad. He was brilliant! He was amazing, and he did really astonishing things.

He was a Mason, which was not unfortunate for him but it was unfortunate for him when the King decided he did not want Masons anymore in the Kingdom of Naples and Sicily, and he said to Raimondo, “What are you going to do about it?” He said, “I will tell you what I will do about it is, I will tell you the names of all the Masons, because I am the head Mason, if you let me off.” He said, “Fine.” So, that is what he did, and his name is apparently still not very popular in Masonic circles even to this day, because you are not meant to do that sort of thing if you are a Mason apparently.

But you are also not meant to fall in love with your butler’s wife and have your wicked way with her and then kill them both by injecting them with hot wax and substances to preserve them forever, which is allegedly what he did. Here are the two anatomical machines, which originally he displayed in his own palace but then, subsequently, they ended up in this chapel, which became a morgue for the whole family and nobody knows how this was done. It was extraordinary, and beautiful, so that is why the story of the hot wax injections – and I would love to leave you and tell you that was the story, but unfortunately, it is spoilt by the scientists, as always. They came along with double diffraction x-rays and various other things, and they found out that these are made of wire, with wax around them. But nevertheless, it is still an astonishing achievement to display the vasculature of the human body in this way, and one wonders whether there was a post-mortem injection of some substance, which actually of course was done in the 1600s in London to preserve the anatomy of the brain, as we will see, with Christopher Wren, one of the Gresham Professors, who was the first person to accurately describe this, and Thomas Willis of course described the blood vessels, based on this injection technique. So, it was technically possible – it was not science fiction. It was just to do it to this degree was not done for another two centuries, but Raimondo was a pretty bright guy and the people he was working with were exceptionally good anatomists and dissectionists.

Of course, the Italians are no strangers to having dead bodies hanging around. They had been doing it for hundreds of years. These are the Catacombs in Palermo, which is just like any of their average churches, which has the odd finger, the bone, the occasional femur, some skulls, even the blood of Christ. There are more fragments, apparently, of the real cross, they could build a small forest to build several crosses from. So, no strangers to having things around – some of it is a little gruesome. Look at the little girl here, perfectly preserved, and, you know, seeing a dead body of a young child like this, even for a hardened old soap like me, is a little tough sometimes to take. So I suppose it is cultural, is it not?

William Harvey, another great Paduan, trained here as a physician, becomes an anatomy lecturer. He has certain guidelines that he gave. There is a lot of them, which are actually preserved in his lecture notes on anatomy, still preserved as well in the British Museum. He actually dissected his father and his sister, so no qualms there, to gain knowledge.

He also dissected Thomas Parr, who was the oldest man living, who claimed to have been born in 1483 and, at the age of 80, he is married, but subsequently had an affair twenty years later and fathered a child born out of wedlock, and then he married another time, for a second time, aged 122. So, a bit of a lad! And Thomas Howard thought, well, this is amazing, at the age of 150 – we better bring you down to see the old King. So, he brings him down to London, where he meets the King, and then promptly dies. Now, the King is quite interested with this and says, look, you had better take him and you had better dissect him to find out because he has lived to 150 in Shropshire and everything was fine, and we bring him down to London and he is dead as a coot in a couple of days – something is wrong here. So, he was obviously fairly infirm. He was blind and he only had one tooth. But Harvey purchased the corpse, and as a birthday present to Queen Henrietta, dissects him in front of her. They dissect Parr and they find out that this was a man who had lived on “sub-rancid cheese and ewes’ milk, in every form, coarse and hard bread, small drink, and generally sour whey,” but this was the only diet he had and this is why he had lived, and coming to London, the air and the change in diet was enough to kill him.

Well, everyone was satisfied with that as a cause of death and he is buried in Westminster Abbey, and here he is, Thomas Parr of the County of Sallop, born in AD 1483, and he lived in the reigns of ten Princes and Kings of England. He was so famous, he got painted by lots of people at the time, and here is his portrait – quite a handsome man. I suppose you would have an affair with him at the age 122 if you were desperate I suppose but... Anyway!

Medical students need to do anatomy, and the reason they need to do anatomy at this time is that England is starting to go to war. The Hundred Years War is now finished – we are not fighting the French on a regular basis. Civil Wars have now stopped – we are not fighting each other on a regular basis. But we are starting to have lots

and lots of enemies, and the reason we are getting lots of enemies is because we are stepping on their toes in various places: in the East Indies with the Dutch; in the West Indies with the Spanish; and in various other parts of the world with our old friends, the French, again. This means that surgeons, particularly on ships, and on the land with armies, need to know things.

Here is an example we have of a medical student actually doing doodles in his notes, and he is pointing, so we know there is a skeleton or something hanging up here, which the lecturer, with his hat on, is pointing at, and he is bored out of his mind and he draws this, and on the top, he actually has a little thing which says "Fugit hora", the hours flee... He is being taught - so he is obviously not quite engaged with the process that's going on here. He is still going through this process of disengagement and clinical detachment that ultimately is not the side effect of medical education, this form, it was the purpose of it, and it was the purpose of it even in my day.

Now then! Holland, a very similar situation here. Guilds of surgeons - in fact, we copied a lot of things from Holland, including the Borse and the Exchange, which led to the profits and money that allowed our College to be founded. They also allowed criminals to be dissected, and here is Black Jan, who was a notorious thief who was sentenced on the 27th January 1656 and then, in the theatre attic, appropriately by the meat market, as this Hospital is by the medieval meat market, he is anatomised. It takes a few days. The first day, prayers are said, and then all the rotty, horrible bits are taken out. On the second day, prayers are said again, and then all the nice muscly bits, which are not rotting so much, are taken out. And then, this is the final day, as you can see, the eviscerated corpse is having the brain finally dissected, which is why they did not ever know what the brain was like, because it was so rotten by the time they came to it they could not find anything about it.

These are a series of wonderful paintings, which still exist in the Guild of Surgeons, and they are going to renovate the museum and have that open to the public as well. So, it seems to be quite a movement of this anatomy year, right around the globe, of trying to encourage people to engage with our inner selves, as the psychologists would say, Glen, but we are actually thinking of it more sort of, how would I say, literally than metaphysically.

Other examples, lessons of osteology. By the way, this was the place where they moved to have their anatomy theatre, and that building still exists, and they built a little dome in there to let the light in. It is important, in this environment, to have natural lighting as much as possible, so you can see what you are doing. Gas lighting is dangerous when you are dissecting, and we will come onto that as well - it is dangerous for you.

Then the famous painting by Rembrandt, who was completely broke at the time and needed to make some money, so he was quite happy to come in here and paint for all these surgeons. This painting was done to celebrate a particular event, and we can actually see him demonstrating the muscles and tendons. There is an anatomical inaccuracy of the painting here, which is an error by Rembrandt.

You did not actually have to have dead bodies, because, after you have done the dissection, after three days, they are fairly high and you have got to get rid of them, and there were problems with getting rid of these bodies as well.

This drawing still exists in this collection, and is a drawing of a contemporary part, and the notes of that patient still exist as well, and Caroline Lamb had a project here with the Wellcome to bring some of those together and that is published on the net and can be accessed. I was partly involved with this project when she was doing it, to ask me questions like, "What is this?" I would say, "Well, we do not often see that in Casualty nowadays, but we have the pathology here so we can have a look at it."

But there is a problem: we are given four bodies a year in this country to dissect, and we now have several dozens of medical students all now having to learn anatomy. There is just not enough to go round, so they pass the Murder Act, and the Murder Act is: we need a special mark of terror, a peculiar mark of infamy be added to the punishment of death. So this was just for murderers. This, of course, increases the supply, but it does make surgeons unpopular because not all of these people being hanged for murder, such as our old friend here, were necessarily considered to be bad people by the general populace, and fights would break out as the surgeons were there to collect the body from the gallows. Now, the surgeons still had the monopoly of four, which came to the Surgeons' Hall, the barbers were no longer dissecting and started cutting hair and shaving beards and collecting money for charity, and then the surgeons of course, once they had done those four, were not really bothered with what happened to the rest of them, so the rest of the 52 criminals that were hanged were in competition for the other places, like St Bart's Hospital or maybe a private anatomy museum, such as set up by William Hunter.

This is one of William Hunter's original dissections, and that is the écorché figure - it still exists today and is used for training the students in the Royal Academy of Arts. So, anatomy, he says, is the basis of surgery. He sets it up in Great Windmill Street, which was no stranger to naked bodies, as when I was a medical student, although the original Anatomy School had closed down in the 1830s.

He had a tenancy agreement originally, when his first one, in Covent Garden, for those estate agents present, who might like to know that there was some problems with having an anatomy apartment next to your

apartment, so certain mutual agreements had to come in too. You must not disturb your neighbour, and your neighbour must not disturb you teaching, and you could come and rent out apartments, but it was much better to have your own and have it especially designed, which they did.

This is what the interior of this Anatomy School might look like, and this is Rawlinson's cartoon of the day of resurrection, where the bodies are going around trying to find their various bits, so they can go to heaven whole.

But it did lead to these wonderful pictures of the Gravid Uterus, and a massive transformation of the anatomy of midwifery, which was ultimately going to make it a much safer practice.

This was one of the *écorché* figures he did. He got this figure in of this criminal, before rigor mortis had set in. Now, there are stories of the surgeons being so keen to get these bodies in that one of them was still alive when it came in and the coup de grace had to be given by the medical students in the anatomy theatre so they could get on with the anatomising.

Smugglerius was not in rigor mortis. He was posed in this position. Rigor mortis then set in, and he was then flayed and a plaster cast was made of him, from which this was made, the bronze was subsequently made, and then, from the bronze, further plaster casts were made. This still exists, and it was used, again, as an anatomical guide in training.

Recently, some Art historians say that they can identify this smuggler as James Langar, who was hanged on the 12th of April, after being convicted as a "footpad" on two charges and acquitted on two others. This is highly unlikely, because he was not a murderer, and you were only convicted to be anatomised if you were a murderer, and if he was not a murderer, he would have been buried and he would have been got long after rigor mortis had set in. So, there are two other contemporary people in the frame there that they think they could be: Benjamin Harley and Thomas Henman, who were smugglers, but they were convicted of murder. Smugglerius goes with them being smugglers, goes with the death sentence and anatomisation that would have gone with them, whereas Langar was not sentenced to be dissected. We know that because we have got his original trial records. Art history and medicine and political history are tied in together, but it is a little bit complicated than it first looks.

Charles Bell, of course, was famous. He took over the Great Windmill School, along with his brother. He was a surgeon at Waterloo. Here is the saw that was used and the bloody glove, which still exists in the museum in Chelsea - you can go and see these - that were used to saw off Uxbridge's leg when he turned to Wellington and said, "My God, Sir, I think I have lost a leg," and Wellington looked at him and said, "My God, Sir, I think you have," and then he fell off his horse and went and had the remains amputated, and survived, and various bloody bits of his uniform and these mementos still survive.

Scots seemed to be particularly good at anatomy. And then many private anatomy schools set up, not just as anatomy, but as *reliquia curiosita*, curious things for thought and thinking. Joshua Brookes had one. John Heathside had one. Rackstrow's public museum in The Strand included an anatomical exhibition, with real anatomical preparations and a great variety of - why was he interested in real anatomical ones? Well, there were also shows coming in from Europe with non-real anatomical skeletons and animals.

John Hunter, the younger brother and former assistant at the Great Windmill School sets up his own, builds his own house. Probably the same architect built both - he was a friend of the family. You can see his painting here, with bits of anatomy hanging up on the walls behind him.

It became a tourist attraction, and when George Cartwright brought over the Inuits to England to show them the sights and meet the King, one of the itineraries was to go round Hunter's anatomy museum, which they did, and they were shown this case full of bones, where the Inuit immediately screamed with horror and said, "Is that the remains of the people he has killed and eaten for lunch?" knowing that they are going to have lunch next. He was told, no, it was not that at all and so on. Unfortunately, they all got smallpox and died, apart from this young woman, who survived the trip back to Canada.

This is the inside of his school, and this is what it might have looked like, with various paintings, drawings, very similar to this room, if you look above you... You see the skeletons hanging around. These are the remains of probably some notorious criminals, and we could probably identify them if we wanted to, and some of them have been identified.

We have an original letter to his sister, from a sixteen year-old surgeon student who was here at the time. It is worth reading it to you, I think:

"My room has two beds in it, and in point of situation, it is not the most pleasant in the world. The dissecting room, with half a dozen dead bodies, is immediately above, and that which Mr Hunter makes his preparations is the next adjoining to it, so you may conceive it to be a little perfumed. There is a dead carcass just at this moment rumbling up the stairs, and the resurrection men swearing most terribly. I am informed this will

probably be the case most mornings, about four in the morning, throughout the winter. There is something horrible in it at first, but now I am becoming reconciled.”

There was an insufficient supply. There are not enough people coming from the gallows. In 1701, there are 24 lecturers in Anatomy, but by 1745, there were over 40 lecturers in Anatomy, each with their private medical school, each with their contingent of medical students, and as we saw, these are not all small concerns. Each of those needs at least one body, preferably two, and they have to show a certificate showing that they have done this dissection to go along to the Surgeons' Hall to qualify as a doctor, sorry, as a “mister”, and get rid of that horrible title “doctor” later in life, but in this period, they were all “mister” and they did not qualify at university. They just were straightforward apprentices and always “mister”s. It is calculated about 592 bodies were dissected by students in London anatomy schools, and that is probably on the small side. It is probably nearer a thousand that were required in the total of England, and a good three quarters of those would have been in London. So, a massive increase in demand – 200 medical students by 1793, over a thousand in 1823, so it becomes compulsory to do anatomy.

The earliest grave-robbers were surgeons themselves. We have a case from 1311 where the students went out and presented the body to the anatomist and said, “Please dissect this for us,” which he did. They got into some trouble. It was a minor misdemeanour and they were not put in prison, but it did go to court, and we have the records of that, going back all over time. But this is really when grave robbery starts, and we know that Fagin and Bill Sykes, for example, were ex-grave-robbers, and again we see in “Oliver Twist”, in Chapter Four, a miniature model of a little patent coffin is shown to Mr Sowerberry – Mr Sowerberry shows this to Bumble. That is the patent coffin, and the patent coffin was built to stop the resurrectionists getting in. It was made out of metal.

You see, how they did the resurrection business, it had to be done very quickly, it had to be done at night, and it had to be done where nobody with guns was, because people realised that resurrection was going on, and the rich put in little watchtowers with armed people and they would shoot you if you went into the graveyard and tried to steal Aunt Agatha's remains. The local poor people could not necessarily do this, but they did have burial clubs, which would save up and they had watchmen. But the very poor were buried in mass graves, twenty at a time, with a thin covering of soil, and they were quite easy to get at. But again, if you were caught doing it, you would probably be lynched, and certainly beaten to a pulp and wish you had never done it before. But you could sneak into a graveyard and tunnel into it, or the most clever way was to use a wooden spade because they do not make as much noise as a metal spade, and you dug down vertically over the head end of the grave a shaft. You then smashed open the coffin, you put hooks in under the arms, and you hauled the body out, and then the sheets on which you had preserved the soil, you immediately put back in, so nobody knew you had been there, and then you rushed the body off, hopefully only hours after the burial, to be dissected.

There was a lot of money involved here. Originally, they cost two guineas and a crown – that is, in modern money, £2.35, which does not sound like much but it was. It went up to ten guineas within ten years – 206 shillings for the first foot, and a penny for each extra inch. In those days, a master tailor or a carpenter would earn 30 shillings a week, £1.50, so one body was twice, early on, and five times, later on, what you would get for a weekly pay, so it was worthwhile doing it and these people worked in gangs. Now, if you got a really interesting body, like a freak, then you got paid a lot of money. I was with a friend of mine who was staying with us from America at the moment and we went to the Hunterian Museum, and on the left are the remains of the seven-foot Irishman. Hunter paid 500 guineas for his corpse. That was a fortune – still is a fortune. Many medical students now would have a little riffle round the graveyards round here for 500 new guineas, I can tell you.

So, nobody wanted this to happen, so here is an example of one of the guard towers. Also, towers were built by the poor parishes to put all the bodies in until they were so rancid and rotten that nobody would want to use them, and then you could bury them. Particularly, it was very worrying when it was children involved, and in fact, there are a number of case where anatomy schools were burnt down and mobs would collect.

It was not particularly pleasant for the students. Here are the students. You see, some of them are wearing aprons, some of them are not, and this is this sort of putrid smell of death that sort of hangs around you. You go along to Young Farmers' Balls, but if you are on the poor farm, you have got to do the mucking-out yourself – you are the one on the corner of the dance floor, and this is a little bit like being the Anatomy student rather than being the GP assistant, you know, at the reunions. The nurses are over there with the GPs, and you are over here, drinking beer with the rest of the people smell like you.

I have pointed out to you that this is highly dangerous. Charles Darwin, the son of Erasmus Darwin and the distant ancestor of someone who is going to take his name, cut his finger when he was dissecting a child, and then, hours later, he had a terrible headache, started haemorrhaging, and he was dead before the next morning. This was terribly dangerous.

The Anatomy Act was then passed in 1832, because of all of this unpleasantness and so on, and this was done to increase the supply. It was done after some terrible things happened, where people were being murdered to sell to the surgeons. Here is Burke and Hare, and this is Burke being executed because Hare turned him in, and Hare goes off to Ireland, under a King's Pardon, where he passes the rest of his days out in a pub on the West Coast.

A few weeks after this, the Anatomy Act is passed. A lot of this is due to Jeremy Bentham, the founder of University College, a great humanist, who was trying to say what we will do is, if nobody collects the body, i.e. it is in a workhouse, we will dissect it, but we will give them a Christian burial, which is kind of nice and everybody's going to vote for that, and so much so that he voted for it himself, but he was not a Christian so he refused to have a Christian burial. He himself was dissected after he was dead, and his remains and his clothes are actually on public display from time to time in the hallway of University College when they unveil it, with his hat and his lovely walking cane. He was quite happy to do this.

What this Act effectively did was to move dissection and the connotations of dissection away from murder and murders and the state and execution to the poor, and the poor did not like it, particularly as they were not asked about it.

So, we are now proposing we are going to increase the supply, because we are not going to take them from the gallows. It actually does not have that effect, but it does have another interesting side effect, which we will come onto later.

We do not have to use dead bodies to teach all the time, and we can use some of these beautiful waxes, and if you have time at some stage, definitely come back when this place is open and look at some of the beautiful waxworks in here, and some of the other exhibits. They are amazing pieces of art, never mind anything else. These were brought over, at various times, from Italy for exhibitions to be held.

Now, the Obscene Publication Act was passed in 1887, and the first job that was done was to close down anatomy museums, to essentially stop you, the general public, from ever being allowed to see what is in here, and what this effect has is to disconnect the British public from the important work and the important resources that these places hold, and ultimately, it leads to things like the so-called Alder Hey scandal, where parts of bodies of young children were retained by the pathologist, and this creates a local outcry. In his cultural milieu, he was doing nothing that had never been done before and something that was considered to be normal, but it happened to be in Liverpool, and Liverpool, at that stage, Boris Johnson felt was going through a rather sentimental period, for a number of reasons.

The main point of this was that consent had not been taken, and the implicit consent that was given by patients in hospitals like this is no longer sufficient, and the crime was the failure to obtain consent, and the second crime, by omission, was the failure to engage the public, to realise that this is a good thing that a slide of my liver or my heart or my child's liver or my child's bones that has a rare disease might be preserved because, one day, there may be no cure for this, but there might be a cure in the future. It is perfectly possible that one day someone might collect DNA from one of these tuberculose lungs over here and find a new cure for tuberculosis nowadays. We do not know this – it is not been done. The retinitis pigmentosa collection at Moorfields, which is not open to the public, goes back to the 1800s, with thousands of specimens.

If the Anatomy Act is followed to the letter, every single one of these has to be buried and handed back to the family and destroyed. So, I am proposing something that is in contravention of a law of England. If I was to actually enact this or encourage you to do this, I would be encouraging you to break the law and I do not wish to do that, but what I want us to do is to engage with this and think that maybe the law needs to be reappraised and we need to think about anatomy and specimens in a different way.

The first job of the Obscene Act was to close down anatomy museums. Why? Because it contained some specimens and also contained one of these, which is a wax venus. Now, wax venuses can be taken apart and show the internal bodies, and you can actually see, here, the early stage of pregnancy, with a young foetus. Of course, this was considered to be obscene. Leeds was the place where this happened. London was a bit more not bothered about it. In fact, it was open on Piccadilly and people used to go in – Carnes Anatomical Museum. But then, eventually, the medical profession got in on this Act, and there is nobody more politically correct than doctors when they get their wind behind them. So, they come in and they close down Carnes Museum, and things are taken outside – the magistrate orders them to be destroyed, and these beautiful, historic models are destroyed in the street, and it is an appalling waste. Very few survive from this.

These models have been used since Ancient times. These are ivory examples, to teach midwives what is going on, nowadays, we would probably teach the mother what was going on and use models like this. In fact, we have a full collection in Medina of these. Now, you can see why this is going to be considered obscene to a Victorian mind, and possibly even to some modern minds, but actually, in the context of what it is showing, is anatomically important and anatomically correct. My argument is, is that if you show this to a fourteen year-old girl in the local school in Hackney, she is not going to want to be in that position in six months' time – she might think twice. And funnily enough, that is what Carnes Museum subsequently became. The wax models of syphilis and gonorrhoea were used as a warning to the people to be careful what you do with your lives – your health depends, to some extent, on what you do with your bodies. But subsequently, it degenerated because it was bought over by the local quack doctors for selling various medicines for venereal diseases, and then eventually, when the medical profession closed it down, there was a little whiff of anti-Semitism about it as well, which is really a rather nasty thing that it was funny to see occurring in Victorian London at that time, possibly related to

the big immigration in the East End. We have little whiffs of it in Dickens as well in that period – nothing more serious than a little whiff, but it is the reason one of the quotations they use is these Jewish quack doctors selling cures for venereal diseases.

There are other interesting collections in Italy. This one is currently closed and you cannot get into it, but this ancient hospital was interesting. This was the Anglo Saxons' hospital when they went to Rome for their pilgrimage, subsequently converted into a hospital, and particularly for poor children, and you see the little hole in the railings here where the babies who had no mother or the unwanted babies were put in, a turntable turned round, and that baby became property of that hospital.

This hospital also had that function in the medieval period, and in fact became quite famous a polyphonic singing school and had competitions with St Paul's School, which they often were better.

Some museums are really for medical doctors discussing things, looking at things and trying to work out what is going on. They possibly have a role for the curious, to see what can go wrong in pregnancy, and perhaps, when you see this, you might realise what a miracle it is that all of us are here today, with the correct number of toes, the number of eyes, one brain, a pancreas, a liver, a couple of lungs – it is an extraordinary thing that happens, and what is amazing is that this does not happen more often during pregnancy.

The whole collection in Paris of waxworks and original babies with two heads, one eye, various cyclopean things, this is for the professionals or those with a strong stomach, but nevertheless, should not be closed down and destroyed. This is an important resource. We do not know enough about this. In fact, Paris became one of the centres for the surgical correction of some of these babies who survived, and my brother trained there, as a facial surgeon, and he is at Great Ormond Street now, and the knowledge he gained from going to these museums and learning in this environment was terribly important to him in his job.

We are moving out of this terror. If you go into some public entrances, we can sculptures of écorché figures, as we used to see when they were not frightening 200 years ago. In fact, they become works of art in their own right. This is Kiki Smith's, the Virgin Mary, 1992, made out of beeswax.

In Chicago, in the museum here, this, which looks like a rack of toast, is actually a human body that has been cut up into half-inch pieces, all the way through. Why, you might say – what is the man on, what sort of maniac has done this? What this is teaching us is the anatomy of CT scans, which are done in slices, at the stage when this was made – they are now much smaller – and then we can look at the three-dimensional anatomy and understand in slices what is going on in three-dimensions. So it is not just that this guy...this is the deranged mind of some anatomist who wants to...

There are deranged anatomists. This gentleman was considered to be deranged – Professor Gunther von Hagens. In fact, the British Medical Establishment said he was macabre. The Anatomical Society sensationalised and trivialised the subject. The BME Ethics Committee – “It is grotesque” that he would put bodies into positions like this, plastinate them and then have them doing various bits and pieces, riding horses, kicking a football. But what he did was to open anatomy once again, for the first time in 180 years, to the general public. You may have seen the James Bond film where there is a whole exhibition of these plastinised figures going on – they have a little shoot-out in the museum there.

But the 2004 Human Tissue Act means that it is highly unlikely that this will ever happen again in this country, and we will not have public access to museums very easily, and certainly a public/private museum will never be set up again for the general public, and this all happened after old Gunther came over.

The private museum will not be set up unless you are Harry Potter, and my final slide, which is to say thank you to you, is Harry Potter's Castle, and if you go to Orlando – and those of you fortunate enough to have twelve and fifteen and 25 year old children may be forced to do this at some stage, and 45 year old girlfriends that also want to go to Harry Potter – when you walk through, you see these bizarre anatomical collections. This is a throwback to the old days of where educated, or educational purpose, would be held by having anatomical specimens, skulls, and animals around you to study.