I am very pleased to be here to talk about the architecture of England, and in particular the book that I have just completed and is published on the eleventh of November, which is called “The Building of England”.

Now, this book has in it a section, which most books do have, of acknowledgements, and in the acknowledgements are... all of you, at least all of you who, over the last three years, have been coming to my Gresham lectures listening to me talking about English architecture because I have found it incredibly stimulating, interesting, educative, listening to your comments and questions over the last couple of years, and I can definitively say that they have made a pretty major contribution really to the way I ended up writing up those lectures and turning them into a history of English architecture.

That is the cover of the book...! Now, unfortunately, 20,000 of them are on a container, on a ship, somewhere between China and here! I have one but, in my panic to leave, I have not even got that with me, but I have got the cover here so you can see what it is – it would make a very good Christmas present!

Now, let us just talk a little bit about this, and, in a sense, what conclusions I would like to draw from my survey of looking at English architecture from the Saxons up until the present day, the series of lectures that I have been giving in this lecture theatre.

The first thing I hope those of you who have been to several of them will have noticed that I have tried to tell the story of England’s architecture in a different way. I have felt very frustrated over the last ten or fifteen years, reading books about architecture, because, in my view, they have concentrated far too much on three things.

The first is style. They have endlessly talked about the origins of Palladianism, the origins of the perpendicular, the origins of the Baroque, and I think that these sorts of questions actually distract us from what is really important about looking at buildings.

The second problem is that these books concentrate too much on big-name architects. It is as if this country was built by a succession of geniuses, one after the other, who came up and built the land, and of course, we know that that is not the case. The vast majority of this country is built by people who are completely anonymous to us.

The third problem, I think, has been that there has been far too great a concentration on particularly country houses, and we can understand why – we are all obsessed with Downton Abbey, are we not? You can understand why, but country houses, and churches, and royal palaces have far too much dominated our understanding of architecture, and as I have made clear over the last couple of years, I believe that we need to look much more closely at what happened in towns, and I am going to talk about that in a moment, if we are going to try and understand what happened.

So, too much about style, too much about architects, and too much about country houses. What I think we want to know, and what I have set out to try and explain, is why people built what they built. How people build tells us about our history as a nation. It tells us about where we have come from and perhaps even tells us a little bit about where we are going. So, I wanted to write a history of English architecture that melded together architecture with economics and with society, and the result, I think, is an astonishing tale. It is a tale of how a small island, a wealthy island, a successful island, but ultimately an island which produced unexceptional architecture, moved to be the centre of the world. That shift between the unexceptional island on the periphery to the island upon which the world pivoted took place somewhere between 1760 and 1815 and continued until about 1930.

If you look back through world history, there are moments when countries or towns or cities, or even individual buildings, influence the architecture of the world. I think you could argue that Florence, in the late fifteenth and early sixteenth Century, the Renaissance, the Italian Renaissance that was born there, went on to have a fundamental influence on the way the world looks. I think you can also argue that Louis XIV’s building in France in the late seventeenth Century – and here, of course, is Versailles – went on to have a fundamental impact on the way people built across the globe. But Britain’s moment took place between about 1800 and 1930. So, the question that I want to set out to ask this evening is: how did this happen, and why did it happen? That, in a sense, I think, is the story of English architecture.

Well, where do we start and how do we start? Of course, we have to start with thinking about England. England, of course, is not an island. England is a bit of an island, and it is quite a small bit of an island – it only covers...
about 50,000 square miles. France, if you think about it, huge country, 212,000 square miles. So, it is a small country, on an island.

But, it is a very low and a very fertile country. You see, in this relief map, that a very small proportion of England, in fact only 13% of it, is uplands, in other words, land over 600 feet high. Scotland, on the other hand, is 50% uplands.

This low-lying, very fertile country, combined with a very good climate, is extremely good for growing things, and here you see a geological map of England that shows the soil types. There are over 700 different types of soil in this country.

It is also a country that is very rich in minerals. It is extremely rich in building materials. And it is blessed with an extraordinary river network, and this is very important because England is not only an island, it is an island that is uniquely well connected to the sea. There are very few parts of this country which are not connected to the sea by navigable rivers, and these rivers, in the early days, allowed invaders to come and get right into the heart of the country, but later on, as we shall see, allowed trade and goods to come from the heart of the country and flow out again. This fact that England is this island blessed with a good geology, blessed with a good hydrology, blessed with a good climate, has had a very, very important impact on our history.

The first thing I think that it did was it enabled England to form as a nation state very early. If you look at a country like Italy, and if you even look at an area like Tuscany, this, now, region of Italy was five, six or seven countries in the period between the Romans and the unification of Italy in the late nineteenth Century. England, because it was an island, had geographical boundaries fixed as early as the Saxon period, with King Athelstan, and it really has not changed since. England had this very early, and very powerful, and very deep-seated sense of being a nation.

Secondly, being an island and not being easy to rampage over with armies, England really has only been invaded successfully by a hostile power once. Here of course is the Bayeux Tapestry... It has been incredibly stable. Yes, dynasties have changed and there have been revolutions and goodness knows what, but it has not been overrun by invaders like almost every other country in Europe.

The last point which comes out of the island is the fact that Britain has this imperative to trade because, if you are an island and you want to trade with your neighbours, you have got to put your goods onto a boat, and if your goods are on a boat, you might as well take them to Bogotá as taking them to Bologna – it does not matter...they are on the high seas. And so, an island is much more predisposed to trade than many other parts of Europe.

So, I see England having some fundamental natural advantages, which many other countries do not have. But these advantages, quite early, made England very rich, and its wealth made England a target. It was a target of course for the Vikings and, as I have already shown with my picture of the Bayeux Tapestry, it was a target for the Normans. The reason that the Vikings wanted to come, and the reason the Normans wanted to come, was because they wanted to get their hands on the extraordinary wealth that they saw in England.

Saxon England, as I explained when I was talking about the Saxons in these lectures, produced some of the largest and most lavish buildings built in Europe at the time. Westminster Abbey, as built by Edward the Confessor, of course, is gone – I cannot show you a picture of it – was the largest building in Northern Europe, and there are still some buildings that survive.

This is Brixworth Church in Northamptonshire. It is shorn of its porticuses, its sort of aisles, so you have to imagine that these were open arcades and this was covered over in an aisle, so it would have been even bigger than you see it here, a very, very substantial church, built in the late Saxon period.

The Saxons were building big cathedrals, big churches. They had substantial walled and fortified towns.

This is St George's Tower in Oxford, part of the Saxon defences of Oxford. Look at this massive, substantial Saxon tower, which is the only surviving remains of the masonry walls that surrounded Saxon Oxford.

This manuscript, that I am very fond of, which was made in Canterbury in the 1030s, shows God watching the construction of the Tower of Babel, and what you are seeing here are Saxon masons and carpenters and joiners and labourers building this tower. Saxon England was a country full of very large and attractive buildings.

But, of course, we all know that the Norman Conquest brought incredible and almost total destruction of the architectural heritage of the Saxons. It has been calculated that Norman building after 1066 used more stone than were used by the pharaohs in the construction of all the pyramids: 500 castles; 16 massive cathedrals - you see, here, the transept of Winchester Cathedral, the best preserved remains of an early Norman cathedral; hundreds, possibly thousands, of parish churches, and from the 1130s, hundreds of monasteries. This extraordinary burst of building continued through the Middle Ages, and the cathedrals that were founded by the Normans were embellished by their successors.
Here is one of the most beautiful sights in England. This, of course, is Exeter Cathedral, begun in 1275. It is 300 feet from the ground to the top of the vaults. This was the first continuously vaulted gothic space anywhere in Europe, a huge and a lavish building.

It is very interesting - many of you will have been to France and Italy and will have travelled round and visited cathedrals. It is noticeable that cathedrals like Exeter, Lincoln, Durham, are substantially larger than their French and Italian counterparts. Almost every village you go into in France has got a cathedral. But in England, there were a small number, and they were extremely large, and they were extremely rich, and they were rich because England’s dioceses were really, really big. If you were the Bishop of Lincoln, and we will look at Lincoln Cathedral later, you will see that you presided over a huge area, and you owned large amounts of land within your diocese, and that land helped to fund your building projects, your palaces, and of course your cathedral. The income of the diocese of Winchester in the Middle Ages was over £3,000, the income of Durham over £2,700. So, the church in medieval England was extremely rich.

Wealth was also generated by trade, and the economy of London in particular began to become dominant after about 1300. But the part of England that was trading most effectively was the whole of the East Coast. Now, this is not accidentally upside-down, let me just tell you. I have deliberately put it this way up because, when you look at England this way up, you can see how incredibly close the East Coast is with all these parts of Europe, particularly Denmark, the Netherlands, and into the Baltic, and that is why, in many sense, the economic centre of early medieval England is right there, in the middle of the North Sea. This is the nexus of Britain’s medieval wealth, and that wealth was concentrated in the hands of a small number of extremely rich merchants who lived in the trading towns, obviously in London, around the coast.

This is one of those houses. This is Clifton House in King’s Lynn. It happens to be my house. I just thought I would put that one in. These are the warehouses that belonged to the merchant. The actual residential parts of the house are behind the tower. This is the tower that is built in the sixteenth Century for the merchant to look over the port and see his ships before they sailed off to trade in wine.

So, England, rich, trading, and its population grows. Throughout the eleventh and the twelfth Century, England’s population grows really very fast, so fast, indeed, that it becomes really important to take in more waste land for cultivation, and the principal areas where the food for this growing population is grown are in these Midland areas where villages had become to form and the common field system produced large amounts of food for the growing populace. As a result, if you are interested in looking for thirteenth Century churches and buildings of that period, this is the area - this is the wealthy part of England.

Here is a church in the middle of nowhere, in Alconbury, near Huntingdon, a big stone church, as you see, with a huge spire, built by a very small rural community, but a community who are producing food that is desperately needed and that is commanding a high price.

But, from 1300, a series of appalling catastrophes hit England. Climate change, a very modern concern, had a fundamental effect. There were a series of very harsh winters, very bad summers, very poor harvests, and these harvest failures, which had already started to cause famine, were compounded, in 1348, by the Black Death.

This is what happened to the population of England. That whole period I have been talking about, with population growing, agriculture prosperous, lots of buildings, suddenly, the population of England literally halves – 50% of the population is killed. This is a complete turnaround in the economic basis of England because, suddenly, after 1348, people are scarce and land is plenty – it had been completely the opposite way around in 1300.

Agriculture is far less profitable, and the money, where there is money, is not in arable, it is in wool, and this causes a major geographical shift in the building of England. No longer are the profitable areas, where the big buildings are, in the agricultural areas; they are now in the areas where grassland is producing sheep and wool, and so you have Gloucestershire, you have Suffolk, and Norfolk, and you have Kent and you have Somerset. Those are where the big churches are built from about 1330. That is why you get places like Long Melford, these huge churches, built entirely on the wealth of wool, which is exported out east through that eastern portal, the economic direction of England, to Europe.

So, we have this extraordinary sort of seesaw movement in early medieval history in England. You have great prosperity, you have a terrible catastrophe, and then you have a new type of prosperity, and the buildings of England, the great buildings, move from the Midlands to these new areas.

Let us have a look again at this map. Here is Lincoln Cathedral, a product of that extraordinary wealth that was available before the Black Death.

Let us have a look again at this graph and you see that, after the population collapsed, after the Black Death, really, it struggled to do anything except slightly decline until just after 1500. But, just after 1500, England’s population begins to grow again. It does not begin to grow because of falling mortality. It grows because of
rising fertility. People begin, because they are feeling a little bit more prosperous, to marry a little bit earlier and to have more children. More babies are born, and the population starts to grow, and, by 1700, the population has got back again to where it was in 1300. It grows very rapidly up until then, and a lot of that population growth is centred in the towns, and in particular, we see a massive growth of London.

Here, of course, is Covent Garden market, and what you see is James I’s great ambition, he said, “I found a town made of timber and I want to leave a town made of stone,” and you see these very elegant houses here, built in Covent Garden, all part of this growth of London, which, by 1700, had grown to 575,000 people and it was the largest city in Europe.

This is the fundamental turning point in the history of our nation and the history of our architecture. The growth of London demanded two things: first of all, that this massive city had enough food to feed it – and here you see the main food market; but even more importantly, enough fuel to keep people warm and to allow people to cook.

That need for fuel really was the thing that transformed the history of this country, because, in 1500, the fuel that was needed for London was brought from the round about woods, in carts, logs and timber were brought in, but gradually, as London grew, it became clear that you were going to have to bring into the city, every year, entire forests of wood to keep the fires burning, and so, gradually, it became realised that you needed to find an alternative fuel, and of course, that alternative fuel was coal. But before coal could be burnt, there had to be some innovations.

The first innovation you had to have was a grate. You cannot just put a pile of coal on the ground and put a match to it. Nothing happens! And even if you do succeed in getting coal to burn without a grate, it just sits with piles of sulphurous smoke coming out in the room. So, you needed to have a grate, and here is one of the first grates in London. It is just round the corner, it still exists, it is in Charterhouse, installed in about 1620. So, a grate that lifts the coal out.

You also needed to have a narrow chimney, a chimney that had a strong draw, a draw strong enough to lift those heavy sulphurous fumes out of the room, and most fireplaces in London in the Middle Ages could not burn coal. They were designed for wood. They were big, wide fireplaces, which did not have a strong enough draw. So, gradually, from the 1620s, fireplaces in houses in London were altered to burn coal, to be narrower and to contain grates.

In 1574, Westminster School only burnt timber in its fireplaces; in 1630, not long after, 60 years after, it burnt 75 tons of coal a year. By 1650, coal was the principal fuel of London, and the decisive moment came in 1666 when the whole city was burnt, and every new house that was rebuilt was built with a fireplace that could burn coal.

This had a fundamental impact on the mining industry in the North-East because this insatiable desire for coal meant that the miners had to dig more and more, and deeper and deeper, and of course, as you know, when you build a coalmine deep, it starts flooding, so they had to find a way to stop those coalmines flooding, and a man, called Mr Newcomen, in 1712, invented a pumping engine, a pumping engine powered by coal. It was incredibly inefficient. The piston at the top here, which you see, did not even have a top to it, so the water all splooshed out of the top. It needed a huge amount of coal to get it going, but it was effective in pumping out the mines. By 1800, there were 2,500 of these steam engines pumping in England. In 1800, exactly the same moment, there were only 70 in France.

However, despite the rapid adoption of the pumping engine, particularly in mines, before 1800, the great sort of technological advances did not really have anything to do with coal at all, and the big advances in the cotton industry, which are fundamental in Britain’s history, were undertaken with organic power.

The big invention in terms of cotton was this little bit of machinery. This of course is the Flying Shuttle, invented by John Kay in 1733, that allowed weavers to move the loom very, very quickly, and of course, what this did was sped up the ability of the weavers to weave cloth, so much so that the spinners, who were spinning the yarn by hand, could not keep up, and that is why Richard Arkwright, in 1711, invented the water frame, a spinning machine which could produce yarn fast enough to keep the weavers in yarn so they could carry on using their shuttles.

Richard Arkwright completely re-organises the whole concept of production. He invents the factory, and his mills at Cromford, which many of you may have seen, were the first time where he organised large numbers of people, with this machinery, powered by water – you can see where the water channels here – powered by water to spin yarn. These big mills are designed specifically to take his machinery. They were 30-foot wide, which allowed two frames, side-by-side, big windows so that you could let the light in so that the women and the children who were there, with their small, nimble fingers and their sharp eyes, could thread the threads into these machines. And, by 1797, there were over 900 cotton mills of the Arkwright type, powered by water. Organic power or water power, was powering the early Industrial Revolution.
But, there was one big problem with organic power: it tied you to the sources of water. It meant that your factories, your mills, had to be built on the sites of rivers with fast-running streams, and what the coming of the mineral economy did was it freed industry from the necessity to be located by water. The Bolton & Watt steam engine, the first engine that translated power from doing that to doing that, to creative rotative power, really made the difference because it made it possible, for the first time, for a mill to be taken away from water and to be powered by coal by one of these Bolton & Watt engines.

Here is one of the first buildings in the world to be powered by steam engine. This is the Albion Mill, a corn-mill, built on Blackfriars Bridge. The corn was brought in on barges. It was milled by the Bolton & Watt steam engines in here, and was taken out again.

You can see the pride that the architect, Samuel Wyatt, had in this new-fangled building. It is built like the townhouse of an aristocrat: it has got a rusticated basement, it has got this beautiful arch with a keystone, it has got these Venetian windows, these big sash windows here. You would be forgiven for thinking that this was a domestic building and not one of the first factories. But the Blackfriars Mill, the Albion Mill, spectacularly blew up in 1791 because, of course, they had not actually managed to master the art of making fireproof mills, and that did not happen for some years afterwards.

So, mineral power freed industry from the rivers. The coalfields of England meant that industry could now be located elsewhere, and of course, it also enabled it to happen on a much bigger scale because these machines were much more powerful than the rivers that came before.

But of course, the coalfields were themselves, potentially, a way of restricting the location of industry. The thing that meant that they were not was the coming of the canals, because the canals linked the coalfields with the industry. They linked the mills with the ports, and they linked the rivers together to form, genuinely, a national network of transport.

That earlier map that I showed you of England’s rivers is now replaced with this map, with the canals linking those together, so that coal could be moved down to London, raw goods could be moved to London, the Midlands, a dense network of canals, allowing goods and coal to be transported east and west.

But, look what happens here. There is nothing on the East. Because what this revolution in motive power did was re-orientate the economy of England from the east to the west. The country literally changed the way it looked. It stopped looking east and it began this extraordinary trade cycle, this triangle, which involved the horror of the slave trade, and it looked westwards, and the western ports – Bristol, Liverpool, and of course London, which is trading west as well – began to develop rapidly.

Here, we have one of the great surviving monuments of the Industrial Revolution. This of course is Albert Dock in Liverpool. You can see where the great ships would have come in. This, unlike the Albion Mill, is an entirely fireproof building. It is built with iron. These great pillars here are iron, and it has an iron frame. It has shallow brick arches. There is nothing flammable in this at all. These great arches, yes, they are decorative, but they also have a purpose: they allow the goods to be swung off the ships and onto the quaysides underneath.

These great dock buildings, particularly in Liverpool, but also in Bristol and elsewhere, were exporting the goods that were created in the great coal-powered mills of Lancashire, the Pennines and of course Manchester.

Here, you see A&G Murray’s Mill. This mill was built in 1801. It was one of the first mineral-powered factories in the world, sited on, of course, a canal, down here, to allow the coal to be brought in and the cotton to be taken out. It was buildings like this that people came to see from all over the world. These buildings, an entirely new building type, gathered together to create entirely new cities.

This is Leeds, painted in 1841, a completely new place. Places like this had never been seen before in the world.

They were inhabited by a completely new person. The industrialists of the Victorian era were people who employed thousands and thousands of people, in massive industrial concerns, which were networked, not only over a country, but over the world. But these people, extraordinarily rich, extraordinarily confident, had an identity crisis: who were they? How should they express themselves and their achievements architecturally? They could not find an architectural language, in which to express their achievement, and so they looked back. They looked back to people in the past that they recognised in terms of their activities, and they looked back to Renaissance Florence.

This is one of the great warehouses of Manchester, built by an architect called Edward Walton in 1855-6, and you can see how those traders, those merchants of Manchester looked to the Italian Renaissance for their inspiration for their business quarters. This was a modern building in 1855.

And, for their governance, they looked back to Ancient Greek and Ancient Rome. They looked back to the Republic of Rome and the Republic of Greece, and here, you see one of the greatest buildings constructed anywhere in Europe in its age. This is, of course, St George’s Hall in Liverpool, built in the early-1840s, by Harvey
Lonsdale Elmes and C.R. Cockerel, and this building expressed the aspirations of this new type of person. Their aspirations were cloaked in an historical guise.

Here, in Leeds, that extraordinary building, Leeds Town Hall, built by a man who had never really built anything larger than a terrace house before, incredible, Cuthbert Brodrick. He was very young, built it in 1852-8. Their frame of reference was looking back to the past; that is where they were trying to get their inspiration from.

But of course, throughout the whole of this period I have been talking about, Britain was at war. Britain was at war with France from 1793, and the background to this great industrial development was the stimulation of war.

I have not really got time to talk about this now, but, if I did, I would tell you about the block-mills in Portsmouth. These are the blocks that the Navy needed to get their ships afloat to fight Napoleon. They had to produce 10,000 of these blocks a year, and their ability to fight Napoleon was constrained by their inability to make these fast enough. That is why the Navy developed perhaps the first mass-production factory anywhere in the world, the block-mills in Portsmouth that, with incredibly cunning machinery, allowed ten unskilled men to produce 130,000 blocks a year. This was the beginning of the Industrial Revolution, and it began in the dockyards and the military warehouses during the Napoleonic Wars.

You can see, here, in Woolwich, the Royal Artillery Barracks, a huge, huge building, built by the Army, part of this extraordinary construction boom during the Napoleonic Wars.

But the Army and the Navy were also not only inventing ways of industrialising their processes, they were also pushing the boundaries of construction. In those days, it was necessary to construct a warship undercover.

This is one of the slips at Chatham Dockyard, number three slip. Unfortunately, it has got a mezzanine floor in it so you cannot see its full glory, but it is 300 foot long, it is 146 feet wide at the base, made out of timber, originally covered in canvas, painted with tar. It was within these great structures that the Navy was building the ships which defeated Napoleon.

But it was not long before the Navy decided that these timber buildings were vulnerable to fire, vulnerable to rot, and what I am showing here is number four slip in Chatham, built in 1847. It is built out of wrought iron and cast iron. This is where the innovation was happening: the military necessities were pushing the limits of engineering to construct these iron buildings, and it was the Navy’s work in Chatham that led to the great train sheds, the great engine sheds of the Railway Age.

This is my favourite Victorian railway station. This is Newcastle-upon-Tyne, this wonderful curving engine shed, built in 1847-51, incredibly early, and using the technology developed in the naval dockyards.

The engine sheds led to the Great Exhibition, a building, possibly the first building in the world ever, to become instantly world-famous. It was a building that was built to be famous. It was intended to attract people from all over the world, which is exactly what it did, and its importance was that it demonstrated the capabilities of iron technology, iron engineering, and exported them, not only across England but across the world, and of course, it led to the construction of St Pancras Station, with the great engine shed, which of course hides behind the Midland Hotel, built by George Gilbert Scott in 1865-7.

So, iron construction, metal construction, in this country, really became a world-leading activity. Here, you see the Coal Exchange, a very conventional building on the outside. You can see how the Italian palazzo style still very, very dominant in 1840s when this is built, but inside, an entirely iron structure for the trading of the world’s coal.

The extraordinary success of Britain’s industrialisation was apparent to everyone by the 1880s: 41% of the world’s manufactured goods were made in England; half the world’s cotton cloth; half the world’s iron; five-sevenths of the world’s steel. These raw materials were exported from Britain across the world, and the money that came into England made London the centre of world banking. In 1875, one thousand million pounds flowed out of London and was invested in countries across the world from London banks.

It was all made possible by the fact that we were an island. The Royal Navy, in 1880, was the size of the world’s next two largest navies put together. The tonnage of merchant ships registered in London was greater than the tonnage of all the rest of the ships in the whole world combined. This was a nation that was able not only to make the goods but to transport them across the world and protect them as they moved, and this political might, this military might, this trading might, of course, led to architectural innovation.

The roll-call of things that were invented in this country is extraordinary. Of course, I show you here the world’s first railway station, the Liverpool Road Railway Station in Manchester, but it was not only railways – hotels, warehouses, factories, post offices, police stations, the first underground railway. These were all inventions that essentially laid the foundations, invented the infrastructure of the modern world, and people came from all over the world to see what England had done.
I think the story of English architecture is a story that is interesting, it is exciting, but it is fairly unexceptional before the late eighteenth century. But, between the late eighteenth century and 1930, this country had its moment on the world stage, and I think what is so interesting, and what is so unusual, about that unique contribution to world building that took place in this country is that it was not based on grand palaces or big churches or the houses of aristocrats. It was actually based on mills and on factories and on railways, on railway stations and signal boxes and sidings. It was, perhaps, if you like, a mundane architecture. It was, perhaps, if you like, an ordinary, everyday architecture. That is not to say that it was small in scale because it was not – it was enormous. And that is why this country, today, I think, has unquestionably the most important, the most interesting, industrial archaeology in the world, and though, of course, we are ravished by our medieval cathedrals, we are delighted by our eighteenth century country houses, if you want to see what is really special, what is really important in this country, you need to go and see those buildings constructed between 1760 and 1930, which are the buildings that created the modern world.