

BBC Dream Builders with Norman Foster

Razia Iqbal: Thank you, thank you. Hello and welcome to the Royal Institute of British Architects in London where we're about to hear from an architect who has made an enormous impact on this city. He's responsible for adding the Gherkin shaped St Mary Axe building to the London skyline, casting the Millennium Bridge like a blade of light across the River Thames and revolutionising the British Museum by spanning its historic courtyard with a great glass dome. It's been said that Norman Foster has left as big a mark on London as Sir Christopher Wren did with St Paul's Cathedral. But it's not only this city in which his influence is felt. Foster + Partners is one of the world's busiest practices, building universities, skyscrapers, hospitals, museums and libraries, from Argentina and Brazil to China and India. As well as reinventing the Reichstag in Berlin and creating the world's first carbon neutral car-free city in the desert of Abu Dhabi, Norman Foster has constructed the world's biggest building with Terminal Three at Beijing Airport.

He's been credited with reimagining the way we create tall buildings, revolutionising the way we build airports and completely rethinking the way we integrate the modern into historical architecture. He's won the Pritzker Prize, the RIBA Gold Medal and his influence on architecture has been profound. Please join me in warmly welcoming Lord Foster.

Norman, let's start with your early years. Your way into architecture was not in any way straightforward or conventional, was it? The working class district in which you grew up in Manchester wasn't a place that would ordinarily send people to university to study anything very much?

Norman Foster: No, that's true. I think I've always been interested in architecture, for as long as I can remember, but it was relatively late that I realised it was possible to actually study and be an architect.

Razia Iqbal: How old were you?

Norman Foster: I started university at 21. So I left school at 16, I worked in Manchester Town Hall for two years. That building made an incredible impression on me. It was a Waterhouse designed building and I can remember being fascinated by the details. Every staircase was different – I can even remember the nooks and crannies. I remember the men's room with great kind of glass cisterns suspended and I was fascinated by buildings. I would make excursions at lunch time, I'd explore Rylands Library which was the first building to incorporate electricity and I was fascinated by the arcades, Barton Arcade, Lancaster Arcade, no longer there. I could just about walk to the Daily

Express Building, which was a modern building, just about do it in a lunch hour and then I did two year's national service.

Razia Iqbal: But before we get onto the national service, because that obviously made a huge impact on you, in terms of flying, and I'm going to ask you about that in a moment.

Norman Foster: No, I never got involved in flying in the RAF. I was a radar technician, trying to find escape routes out of going back to something that I was obviously not suited for. I got into an architectural practice more by pretence than anything else, trading on the administrative background at the Town Hall, but that was after national service.

Razia Iqbal: And what were you doing inside that architectural practice? What did they allow you to do?

Norman Foster: I found myself in this office being an assistant to the contracts manager. We would go around building sites and lift up man holes and find that there was nothing underneath them and I plucked up courage to eventually talk to one of the architects in the drafting room and it was the youngest. He was studying part time at the art college down the road, and I said, what do you think of Frank Lloyd Wright and he looked at me and said: "is he at the art college too?" And I think that that was a critical moment. Suddenly, the idea that I might know more about architecture, and this guy wore the white coat, so all the people in the drafting room wore the white coat. So I said to him: "how do you become an architect?" "Well, you know, you have to have a portfolio or drawings, and where do you go? Well, go to the college of art, where I go or go to the university." So I would take drawings from the office, copy them, I would also start painting, I was inspired by Lowry, the artist and so I thought, well, before I go to the college of art or the university, I should at least let the boss know.

So I knocked on the door of John E Beardshaw and I said: "I just wanted to tell you, before I made the move, that I'm thinking about trying to get into a place and study architecture." So he said: "how can you do that, you haven't got a portfolio?" So I said, "yes, I've got a portfolio, I've got it at home." "How do you get a portfolio?" So I said, "well, I take drawings home, I'm the last to leave the office and I'm the first in the office and I copy them and I made some of my own." So he said, "bring them to me tomorrow", and he said, "you're a square peg in a round hole, I've got a place for you." So he gave me a white coat, gave me a book of standards, which told you the width of a door and how you drew a staircase, and then it got a little bit more interesting and a bit more complicated when I went to university. And I worked the vacations, I worked the evenings, I worked overnight and earned money to pay my way through university and then of

course I got to the United States and found everybody else did it, it was no big deal.

Razia Iqbal: Let's talk about the flying, because it's clearly a really big part of what influences you, what makes you think about the kind of buildings that you imagine. I want you just to talk us through that very specific influence.

Norman Foster: I remember being on Dunstable Downs with a family picnic and looking across and seeing these sail planes and I thought those are just the most beautiful craft I've ever seen. I mean just extraordinary. Extraordinarily moving to see these beautiful craft flying quickly, circling, climbing with no engines. So I went down to the gliding site and had a demonstration of flight and I was totally hooked. And over the years I went from sail planes, from racing sail planes to helicopters to single engine to multi-engine. I got an instrument rating so I could fly the airways. I've flown historic aircraft, I've...

Razia Iqbal: In fact you once counted, you once counted that you had flown 75 different aircraft, that you had personally piloted. Just, I feel like I haven't really had a sense from you about what it feels like to be a pilot? What that means to you in connection with your imagining of buildings?

Norman Foster: Well I think that different emotions with, the relationship with a sail plane is very different and in some ways it's almost like flying a fighter, it's very, very responsive and the work load is extraordinarily high. I mean you see it from below, but to navigate to the weather patterns, to be able to fly fast through sync and find rising air. It's a very poetic experience and it's a very extraordinary man/machine relationship. That, I think is true of any aircraft but there is an extraordinary, almost ethereal quality. I think that flight changed the way that height, ascending the Eiffel Tower and flight, changed the way that artists saw the world. You have a perspective where you really see the beauty of the planet, I mean it's incredibly moving. You might be moved by mountains, by lakes and so on, but when you look down from a distance you see the extraordinary beauty and you see the horrors. You see the mindless waste of space, you see the sprawl which from above looks uglier than the reality might seem, and somehow there is more compact settlements of those buildings that work with nature, they seem so much more natural from there.

So it's very revealing, I think it's very insightful, it's very poetic and it is this incredible gravity defying experience, the fact that if it stops, it falls out of the sky and you can never make a comparison with any other form of mobility. You can always pull the car over and get out of the car if you're

unhappy, you can always get off the bike, but if you don't land the aircraft, that's it.

Razia Iqbal: Well let's talk about another major influence on you. You won a fellowship at Yale and there you met your early collaborator, Richard Rogers. So tell us how much that American experience affected the buildings that you started to create with Richard Rogers and others.

Norman Foster: I think it was totally transforming, this feeling of incredible optimism 'can do' spirit. It was a great period in America, it was an extraordinary period, I mean I still get a tremendous charge from America, I love it in all kinds of ways. But all the people that you might read about were actually there and doing it, so you could go to Chicago and there's Mies in the office. Go to...

Razia Iqbal: Mies van de Rohe?

Norman Foster: Mies van de Rohe. Go to Pennsylvania and there's Lou Kahn, and you visit the Frank Lloyd Wright houses. Coming back to the realisation that there was a pride in work and real can do qualities and that, in some ways, came out. I mean something that was a bit of joke between Richard, Eldred and myself was that as Europeans, we had a tendency to debate and argue. At one point I think that our American colleagues in the class got a bit exasperated and put a notice up which said something like, "stop talking, start drawing" and we ended up putting a notice on our side saying, "start thinking". But it was a great combination because there were three key individuals, so it was a great time.

Razia Iqbal: Well let's talk about another major influence on you, the great mentor of those early years and someone whose ideas still have a huge influence on your work is the eccentric futurologist, Buckminster Fuller, the inventor of the geodesic dome. What did you take from your meetings with Bucky?

Norman Foster: We worked together for the last 12 years of his life and I think that he was an extraordinary conscience, in the sense that he was the first, I think, to identify the fragility of the planet. He was an extraordinary individual with a great grasp of three dimensional form, belief in the way in which technology could be harnessed and that there was no need for people to suffer, to be deprived, that we had the intelligence. So he was an incredible optimist and of course a philosophy that was about performance, and in a way he predicted so many of the things that we now take for granted. I mean he was forever going on about the power of miniaturisation, the ability to 'do more with less'. He would draw comparisons with the earlier age of vast tonnage of copper cabling across the oceans and the way in which a satellite had transformed that. But he never lived, of course, to see the revolution, which we take for granted, in

terms of the computing capacity and communicating ability, which we take for granted. But in a way, he anticipated that, and he was an incredible individual. He was expelled twice from Harvard and was finally honoured with a chair in poetry.

Razia Iqbal: Let me ask you about a particular incident. When you finished the Sainsbury Centre, which was an art museum and art history centre, for which you won the RIBA Prize in 1979. It's a big part of my life, the Sainsbury's Centre, because I was a student at the University of East Anglia. You flew over this site with Buckminster Fuller and he asked you a very surprising and now quite famous question. Tell us what that was.

Norman Foster: "How much does your building weigh Norman?" Well what happened is that I flew him down in the helicopter and we landed on the lawn and we walked in through the conservatory windows into the café and he just strode right up to a glass display case and there was this tiny Eskimo carving and he said, "my, look how well this little fellow sits in this space". And then he went on about scale and then we walked the length of the building, we walked through the restaurant, we walked outside, we walked around the building, that took rather a long time, it probably took about an hour. We came back into the restaurant and then he said: "and how much does it weigh then?" And I said, "what?" "The building, how much does it weigh? Do you know how much it weighs? I mean it's very, very important."

Razia Iqbal: You didn't know, did you?

Norman Foster: No, of course I didn't know. So after his visit I sat down and got kind of a group around me and said: "how much does the building weigh?" And they looked at me as if I was mad. And I said, "no, I'm really serious, we've got to find out. I mean, find out."

Razia Iqbal: Why? Why is it significant?

Norman Foster: Why is it significant? Well, the analysis indicated that something like 8% of the volume was in the basement and 92% was in the main part of the building above. The basement was out of sight, out of mind. Although it was only 8% of the volume, it was four times the weight and going through it, it was twice the unit cost of the space above and we discovered that really, that's where all the joy was, that's where the action was, that's the museum. Nobody is really interested in the basement, there's no light there, it's just storage space. So an incredible realisation about the relationship between weight, volume, joy and value for money.

Razia Iqbal: Let's have some questions now from the audience. This is Dream Builders from the BBC World Service. I'm talking to the architect Norman Foster, at the Royal Institute of British

Architects in London. In a moment we'll be discussing how Norman Foster reinvented high-rise buildings, airports and pioneered new ways of modernising old buildings. But now, who would like to ask a question on what we've been discussing so far, Norman Foster's influences and early years as an architect? The gentleman right at the front?

Question 1: Hi, I'm Salvador Rivas. As a source of inspiration and influence to many of us, what would be your advice for young architects in these challenging times?

Norman Foster: I think that it's a very interesting question – you study hard, you graduate and then how do you find a job? I think that that's genuinely tough, but the situation is cyclical and the reality globally is that there is a global shortage of architects and engineers, and for me the action was, in America, as I described, as a youth. The action is in many other places at the moment. In other words, if you go to China, if you go to Malaysia, if you go to Latin America, it's a different environment. So I think that if you're really passionate about seeking the action, then I think you go where the action is. And there's lots of action and there's lots of excitement.

Razia Iqbal: Can we have another question? One right at the back, I think a hand went up?

Question 2: Hello, my name is Abid, I'm an architect working in London. You talked about your initial influences, things that inspired you towards the beginning of your career as an architect. What is it that inspires you now?

Norman Foster: What inspires me now? The same things, interestingly, that inspired me when I was a student, and at any time in my life. I'm inspired by anything that's really well done. And that might have an architect's name on it or not – it might be an anonymous building. But I'm inspired by design, I'm inspired by architecture, I'm inspired by art, I'm inspired by sculpture, by paintings, on a fairly selective view of that. I'm inspired by design in the wider aspects, aircraft, cars, locomotives, I'm inspired by anything that commands respect by virtue of its excellence – it could be a very, very simple thing.

Razia Iqbal: You said to one of the people asking you a question that young architects or architecture students should think about going where the action is. Let's widen where your work has been seen. Your first big international commission was the Hongkong and Shanghai Bank in 1979. You'd never built a bank, in fact you'd never built anything taller than four storeys, but what you proposed was a prefabricated structure, dominated by a cathedral-like void inside and a sun scoop and mirrors outside, to bring in natural sunlight deep into the interior. You put a huge amount into winning that competition, but it was the most extraordinary risk, wasn't it?

Norman Foster: It was a high risk. We were finishing projects, we had no new projects coming in, the fee on a typical project is front loaded, so we'd virtually spent the money in the early phases and we had these buildings which needed finishing and needed funding to finish them. And yes, we were, if we hadn't have won that building, maybe we wouldn't be having this conversation – yes, it was quite a gamble.

Razia Iqbal: Tell me about the self-belief that made you think, "I can win this?"

Norman Foster: I think if you really are passionate about something and you really go for it, then you commit everything, you don't compromise, you just go all out. And I don't have any rationalisations around that and I probably wasn't as calculating as it might seem, to talk about it.

Razia Iqbal: Why do you think you won? What was it about it that compelled them to commission you?

Norman Foster: I think that it might have had something to do with the fact that travelling from anywhere to Hong Kong at that time was, in 1979, was quite an experience. It was a full 24-hour trip by the time the aircraft has stopped for fuel and so on, and we were invited to the briefing at the bank, along with the other architects competing for the project and, like everybody else, having gone so far, we said, you know, we'll go and look around the region. So we bought a kind of inclusive ticket and after the briefing, got so engaged with this project that we did all kinds of things, as a small team. We'd been told not to worry about feng shui and that the bank would take care of it. So the first thing I did was commission a feng shui specialist and paid for the advice and the drawing.

The second thing is we cancelled our travel trips, just cancelled it – everybody else left and we stayed on. And I wanted to know, you know, how the banking hall worked, so I was talking to the bankers and they said: "but you know, why do you want to know? If you're asking all these questions and we're giving you the answers, then we should share that with the other architects, shouldn't we?" And I said, "no, I think that's outrageous. I mean, what's the point of hanging on here if we're?" So there was a certain sort of chemistry and then I think that feeding all that back and totally questioning the idea of a high rise building, before then, every high rise building had a central core, so imagine it's like a kebab. You have the rod down the centre which are the elevators, the lifts, you know, all the machinery and stuff and then you have a strip of space like the meat around the edge and if you sit on the edge you get a great view, if you're not on the edge, then it's bad luck. So the idea of taking the core, fragmenting it, and putting it at the ends, so that you essentially have

open, flexible space was, nobody had. I think that, perhaps they had the advice of a very wise individual, Gordon Graham, an absolutely remarkable man, who was advising them and these bankers who didn't profess to be architects, I think that they saw a lot of the logic and anyway, through that process we ended up as the winners.

Razia Iqbal: Well if the Hongkong and Shanghai Bank was one new departure for high-rise buildings, the St Mary Axe building in London, or the 'Gherkin', as it's known locally, is quite another. You don't seem to be happy with the way other people build skyscrapers. Can you explain the break that the Gherkin made with high rise design of the past?

Norman Foster: That's a kind of evolution. You design buildings, some don't get built, but you learn a lot from them and there was the Millennium Tower, the tallest building in the world conjectured with a group of Japanese engineers – a very serious project, 800 metres high, it never got built. But we learnt a tremendous amount from that, and then there was the Climatroffice, with Bucky Fuller, which looked at the idea of taking a kind of garden, with its own micro-climate, where the ecology of the planting would work with air movement through the building, and Birkin Haward at the time did some rather beautiful drawings of that, very poetic. And then we built the Commerzbank, and the Commerzbank is the first building that is a green high rise building and which uses a high degree of...

Razia Iqbal: This is the bank in Frankfurt?

Norman Foster: That's in Frankfurt.

Razia Iqbal: And when was that?

Norman Foster: So that was about ten years before Swiss Re or the Gherkin.

Razia Iqbal: Do you like that name? Do you?

Norman Foster: I think it's great, yes. And I love the fact that it was a hostile jibe at the building and that it's been adopted in a kind of endearing way, and the building I think has become a symbol for all kinds of ventures and so on. It had, at times, an extremely hostile press, but I think as it's become something that is very much of the skyline, I don't think it's something that we could have done instantly. There was very much a build-up of experience.

Razia Iqbal: Let's look at the commonalities with these high-rise buildings, because sustainability is one thing that is common to the buildings, and you've written about this, the way in which buildings consume almost half the energy we generate in the industrial world. Given this concern of yours to do more

with less, which is something that you inherited from Bucky Fuller, to use recycled materials, to cut down on air conditioning and to have buildings generate their own power – isn't it a little bit ironic that one of the areas that you have made very much your own is in airport design? Because burning fossil fuels and causing pollution and depleting natural resources, that all comes from people flying all over the world.

Norman Foster: Yes, I mean the energy consumption, I don't have the statistics for the carbon generated by air travel, but I think you'll find it will pale then to absolute insignificance against the other factors of buildings and the movement between buildings. I mean that is a major element and it's also a truism that 747s are now being phased out because they are gas guzzling, they're not affordable, they consume too much fuel, they're noisy. So I think we're seeing an evolution, a process. But it's a connected world, it's a mobile world, it's not going to go away – the airport is a fact of life. So the challenge is to use those as opportunities for regeneration, to build them responsibly and to see them holistically as part of a wider network of infrastructure. For example, the Thames Hub project has been dubbed the Thames Hub project but the airport hub was only one component of a much bigger picture, it was about connectivity.

It was looking about mobility, a big driver was eliminating the gap between the rich south and the poorer north by bringing opportunities, by reducing congestion and by making the nation safer, in the sense that you wouldn't be over flying. Very, very few cities are over flown in the way that London is. So buildings individually are important, but also the totality of infrastructure – something like 70% of the energy an industrialised society is consumed by buildings and the movement of people and goods between those buildings.

Razia Iqbal: Let's move to looking at how things are done differently in different parts of the world. Terminal Three of Beijing's Airport is the largest building in the world, yet it was built in just four years and there was a workforce of 50,000 people and at one point there were 100 tower cranes on the site. Compare that with Heathrow's Terminal Five. It took 19 years from conception to completion. Do you think that Europe, Europeans and Americans can learn from how things are done in Asia and the Middle East?

Norman Foster: Yes, I think there are a lot of misunderstandings, a lot of misconceptions. Beijing is 1.3 million square metres – Heathrow in its entirety, with five terminals, is just over 900,000 square metres. So Beijing, as a building, is bigger than all five terminals in Heathrow. You take Terminal Five, from the published data that is 375,000 square metres, so Beijing is one million square metres bigger. Now, it's very

popular to say, “oh well, it took a long time but we are a democratic society, we’re not a one party system, we have trade unions, we have planning procedures and enquiries, and that is a fair price to pay for things taking longer.” But if you analyse it, I think you’ll find that it wasn’t 19 years, it was 20 years and if you compare: take the longest planning enquiry in the history of planning enquiries, it took four years, and then the planning process took two years, that’s six years. So take six years from 20 years and you get 14 years.

You’re comparing 14 years here with four years there: you’ve taken out the democratic process, you’ve taken out the plan, so that comes down to decision making, it comes down to having a very, very clear idea of objectives and getting on with it. And that is, in the spirit of our forebears in the 19th century, who created an infrastructural heritage that we’re still existing on, it’s squeaking and wobbling. You know, the earlier question about go where the action is, go where the excitement is, go where it’s happening – there are very important lessons to learn from that.

Razia Iqbal: Well, so what are these important lessons?

Norman Foster: I think the lessons have to be political lessons. I mean in the end, the decision making about major infrastructure is a political decision.

Razia Iqbal: I mean it is extraordinary when you think about the 50,000 workers who built that airport, they were working three shifts around the clock, 24/7 and that’s what made it possible.

Norman Foster: Yes, well no, it’s not. Because even if you say conceiving and building the building was four years, there was six years construction. Now, okay, let’s add that together, six years construction, four years enquiry – 10 – two years planning – 12 – you’ve still got eight years to account for, that’s the misconception. It’s not about cheap labour, it’s not about a one party system, it’s not about throwing a lot of people on the job and actually, it’s more difficult to manage, organise and co-ordinate 50,000 people than...

Razia Iqbal: No, sure, but you know, you know that.

Norman Foster: And you’re comparing a building of 1.3 million square feet with something which is 0.3 million.

Razia Iqbal: But when you talk about it as being a political decision, that if you’re looking at architecture and design and planning in societies as being political decisions, you, in your time, have had access to politicians, what would you say to politicians in the western world in terms of what lessons you’ve learned from building in Asia?

Norman Foster: I don't know, maybe there's certain inevitability in terms of the fact that when you have a very comfortable lifestyle, you have less appetite for change. Maybe in those economies which are hungry for change and hungry for progress, there is the same impatience that there was, and the same relationship between improving the quality of life. But I think it's also about a philosophical issue of caring for future generations – that is a powerful driving force in those economies, and it should be a powerful driving force here. Because we should care for future generations in the way that the people in the past cared for us, and provided for us, and if we're not investing in our future and we don't have a belief in future generations, then that's a philosophical/political issue. Because the architect, in the end, has no power. I mean, if you want a house, I can't tell you what kind of house you're going to live in, I'm only as powerful as an architect, as I am as an advocate in that sense. I have absolutely no power.

I mean, for example, the Thames Hub project that we created and we funded was a sincere attempt to say look, we're exposed to all of this in Asia and in these emerging economies. We've seen what's possible, it's no big deal to shut down Heathrow and move it over there. I mean Beijing was easy compared with Hong Kong. With Hong Kong there was no land, you know, if you're in Singapore and you want to build a building, you've got no land, you have to buy land from somewhere else and bring it and dump it in the sea to create a building site. So Hong Kong was epic compared with Beijing, and it just shut down one airport and overnight moved it to the... it's not a big deal. So here we are saying, you know, look, we share this experience, there is an important debate going on – it wasn't to invite criticism but great, I mean, if it's added to the debate.

Razia Iqbal: Let's move onto the third area where it might be said that you've made an indelible mark in re-imaging and reviving historic buildings. A great example, of course, is the Reichstag in Berlin. When Germany reunified and the parliament returned to Berlin, you had the job of recreating the parliament building. You did this with a symbolically significant glass dome, which as well as funnelling light into the chamber, made the proceedings there seem more transparent. This idea of inserting sleek, modern additions into older structures comes up time and again, but your plans in New York for the redesigning of the New York Public Library has come up against a certain amount of resistance, and I wondered whether you could just say something about whether you think that demonstrates a change in attitudes towards the redesigning of historic buildings?

Norman Foster: I don't think it marks a change in attitudes, I think that inevitably on high-profile projects, there's a polemic and you know, that's good, that's healthy, there's a debate. Inevitably

sometimes there are a lot of misunderstandings, a lot of misinformation. When it was created in the early 1900s, I think 1907 or something like that, it was all embracing. It had a research library, the Rose Room, sitting on top of the book stacks, it had a lending library and it had a children's library. And then in 1985 they moved the lending library and they moved that into a department store which they'd acquired on the other side of the road, because they needed more space, demand was expanding and at the same time, mindful of the future, they managed, very cleverly, to acquire the space under Bryant Park, which is next to the library.

So they came up with this very interesting idea of, first of all they were concerned as trustees of the library for the safe guarding of the Rose Reading Room, which sits on top of book stacks, which are unprotected. So if there was a fire, there's no protection, they wouldn't be closed today, the whole building would collapse and the Rose Reading Room. Also, the books, the heart of the library, were deteriorating, so they had this, I think, brilliant strategy of bringing the building back to its roots, closing down the horrible building opposite, which is a really nasty old department store – I mean no natural light, no views, horrible – and putting the books under Bryant Park, immediately next to the, in proper conditioned space and then creating a new circulating library where the book stacks are. But then there was a lot of misunderstanding and the previous director left and there was a big gap in between before the new director came, so there was nobody really representing the library. So there was a lot of outpouring about, you know: "they're going to popularise it, have you heard? They're going to have a Starbucks in the library."

Razia Iqbal: Well, they said in fact you were going to turn it into a Starbucks.

Norman Foster: Into a Starbucks? I mean where the Starbucks came from, nobody knows. Maybe Starbucks set the rumour going, good for trade, you know. The polemic then widened to the fact that these book stacks were of extraordinary historic value.

Razia Iqbal: Do you think though that you are in a position to persuade those detractors? Those people who are saying that you're...?

Norman Foster: I think it's about the reality. I mean the reality of the book stacks: they were a catalogued system. They were bought off the market. There are millions of them around the United States. The inventors, Snead, in the 30's, rejected their invention and said it was actually dangerous, that the book stacks should be holding books and not holding up precious buildings. So I think there's misunderstanding.

Razia Iqbal: So it's not going to be a Starbucks? Just for the record.

Norman Foster: Eventually I hope you'll be able to get a coffee there, but...

Razia Iqbal: This is Dream Builders from the BBC World Service, I'm talking to the architect Norman Foster at the Royal Institute of British Architects in London. In a moment we'll be discussing the city of the future and Norman's ideas about the role of architecture in improving society. But now who would like to ask a question on what we've just been discussing, reinventing the skyscraper and the airport and historical refit? In the front row, just introduce yourself for us?

Question 3: Yes, Charles Jencks, an old friend of Norman Foster. Norman, way back when you won the Hongkong Shanghai Bank, we had a dinner, which was most unfortunate, and in it we discussed the fact that it was the most expensive building in the world, per square foot, and I know your very strong social background and your late wife Wendy's and I asked you, I said, "how can you justify, with your great belief in doing things for the people, this building?" And Wendy said, she said, "well, you know, lots of people will see it and it'll be heard around the world, it'll be very popular" and she then said something which I found out is an extraordinary truth. On a Sunday, when the bottom is open, which is usually is, there were about, I would say, 10,000, I may be exaggerating, women, all Filipinos, who were, had no place to go, no public ground and they've set up their livelihoods and played games. And I have to take my hats off to someone for allowing that and building that public ground. Anyway, a great surprise and Wendy was right.

Razia Iqbal: Did you know this about this building?

Norman Foster: I did know about the whole Filipino thing, yes. I mean I think it's an extraordinary phenomenon, for one day a week it's their territory, it's their home. First of all, it was the feng shui man who talked about the way that you enter a building and the spirits and the energy and the way that it should flow, and I'd forgotten all that and I remember giving a talk on the project, when it was being designed, in Paris, and discovering the feng shui man's sketch, having completely forgotten about it, and the decision to lift the whole building above the ground, so you created a public space which was an extension of the park opposite. It was all about giving something back to the city. The interaction between the private bank and the city and creating a communal good.

Razia Iqbal: Underneath the building?

Norman Foster: Underneath the building. So you would have an extension of the park under the building, flowing under the building, and then escalators would take you up to the banking hall, so it would be the first banking hall that wasn't on the ground

floor. So it was the interaction between the building and the city and this whole thing about public space and infrastructure, and I think that that is a very, very strong theme in our work.

Question 4: Hi, I'm Angela Brady, President of the RIBA. When you're working overseas, particularly say in the Middle East, everybody seems to want a Norman Foster building and there is the identity that architecture today should be tall glass buildings, and it's the race for height. If you come across a client who says I want you to build me the tallest building here in this desert and I will pay you well for it, what's your reaction to that?

Norman Foster: I think you'd consider every approach on its own merit and if it was such an obvious stupidity to do a tall building all in isolation, I think you'd do everything in your power to try to bring some common sense to bear and to demonstrate that if this person wants to make a statement with an image, then it's not necessarily how tall it is. You can be the tallest now, but in the future 'question mark'. So I think you would use your power of advocacy, and if that person really wanted to do a total and utter stupidity, I mean you wouldn't want to be a party to it, because in the end you're associated with it for good and for bad.

Razia Iqbal: Well let's talk about Masdar City. It's an extraordinary proposition, it's a car-less solar powered carbon neutral city and it's something you are actually building in the hot desert climate of Abu Dhabi. Just briefly tell us how the city will work and how people will get around?

Norman Foster: We've become used to the idea that you can take an office tower and in an age of cheap energy you can just throw cooling and heating at it and you can put that building anywhere in the world. That gives, I think, a very, very bad interpretation of globalisation. I think what we've had to do through very intensive research is to say before you could throw a switch, before there were air conditioners, I mean how did these extraordinary communities create settlements in a hostile environment, whether it's an igloo in the frozen wastes, whether it's alpine buildings on the top of mountains in sort of 30 degrees below, or if it's boiling hot in the desert. How did they, before they could throw a switch? So, learning from that, and applying that with modern technology, we were able to create buildings from those historic lessons. Also, freed from the demands of the car, by putting the car at a lower level, whether it's an electric robotic vehicle or whether it's a clean traditional vehicle, going the way that cars are going now.

So we've been able to demonstrate that simply by the power of the thumb, nothing else, this very energy-intensive

building, because it's a research laboratory, it's 24-hours, I can't think of a more energy intensive building than a research laboratory. Because the Masdar Institute is about research into renewable energy and itself, is an experiment. So the amount of energy that we have to inject to get the standards we're accustomed to is significantly less, because we're working with nature. Now, that philosophy, of course, has produced very intimate spaces, quite narrow streets, with shading because your orientation, thick walls, high insulation, grillages that will modify the light, so there are not large areas of glass. In a way it rejects a lot of the things that we associate with modern architecture, so it's learning afresh.

Of course, if you were to apply that philosophy in another climate, say in Siberia, you would be designing to welcome the sun – the sun would be your friend. So you then start to see the potential for global architecture which is truly of the place, because it's generated in the first instance by the climate and also by the customs, so that your energy top up is relatively small compared with a conventional building, then you can start to economically apply photovoltaics and fuel cells and other devices.

Razia Iqbal: Do you think it's possible to spot a Norman Foster building because of its predilection for diamond shapes or diagrid triangulation, as you called it?

Norman Foster: I think you should ask Ben Johnson and...

Razia Iqbal: Well no, I'm asking you, because he's not up here and you are. You know, the domes, the windows, the, in the case of the Hearst Tower in New York, even your walls have these diamond shapes. How important to you is it that a Foster building can be identified as such?

Norman Foster: When you're designing you're not really thinking of those things and it is absolutely true that this does take triangulation and a lot of the economies that follow from that, so there's 20% less steel as a result of that geometry, and it's highly appropriate for that building. But it's not necessarily appropriate for other buildings.

Razia Iqbal: The Hearst Tower in New York you're talking about, yeah?

Norman Foster: Yes. And I think if you look at the whole range of projects, the materials can go from timber to steel to glass to stone, it's a pretty varied. I mean we were having a design session this afternoon, a kind of team session on a project, a roof, and so maybe this roof should be carbon fibre – we haven't done a carbon fibre structure yet. It would be supported on glass, using glass structurally for the first time. So if, when you see a building that we've produced and you feel that there is something there in terms of its personality, then I think that's

testimony to the way that we work, and the way we apply the principles which we've developed over time.

Razia Iqbal: You've designed an extraordinary number of buildings, do you know how many?

Norman Foster: Well, we had this conversation earlier and I think it's approaching 300. But I think also the value that we place on views, on natural light, on the freshness, the environment of the building, the way that the building will engage in a city, in the way that we were talking about. The more I think about it and I haven't thought about it, but you start to make me realise that there are a set of design principles, which in different ways permeate very, very different kinds of buildings. Whether it's a tiny building in a rural setting, or whether it's something in the middle of a city, there are common denominators, yes.

Razia Iqbal: So you've designed more than 300 buildings?

Norman Foster: No, less than 300.

Razia Iqbal: Less than 300. You survived cancer and a heart attack, you regularly do cycle marathons, cross country skiing and this is in your mid to late 70's. It doesn't look as though Norman Foster has any desire to slow down. I want to ask you to reflect on what drives you, what makes you so determined?

Norman Foster: I've never really thought about it, I mean I...

Razia Iqbal: Really?

Norman Foster: Well I have an incredible wife. I have great children and two extraordinary young children.

Razia Iqbal: Is your success hard won, do you think? Do you regard your success as having been very hard won?

Norman Foster: I think I work hard, yes. I think I always have. But I think I've been very fortunate to have extraordinary individuals around me. I think I'm essentially a shy person, but I enjoy engaging with people on things that I am passionate about. It could be with trainers and cross-country ski fanatics, it could be with cycling freaks, it could be with artists and I think I get pleasure out of challenges.

Razia Iqbal: This is Dream Builders from the BBC World Service. I've been talking to the architect Norman Foster at the Royal Institute of British Architects here in London. We've been discussing airports, skyscrapers, historical buildings and sustainability and many of the great buildings Norman Foster has designed. Who would now like to ask Lord Foster a question on anything at all? Thank you.

Question 5: How are you able to bridge the gap between cultural influences and contextual dilemma? Because looking at some of your projects, like the markets project in Abu Dhabi, and one of your latest projects in Morocco, Marrakech, it tends to be a more or less like cultural influences on this project and how are you able to bridge that with modernity as an idea in architecture?

Norman Foster: It's very, very difficult to generalise. All I would say is that I do see all kinds of benefits from globalisation. It doesn't necessarily mean that everything is going to be the same everywhere, that working with the elements and nature and the local traditions, that are the possibilities for an architecture of place. And then, if you could bring globalisation to address the big issues of 25% of the planet not having electricity and power, and the relationship of that to life expectancy, to liberalisation, to eradicating violence and wars, there's a very, very close relationship between power and so on, and the fact that one third of humanity lives in slums and that's 40% without a water closet. So if globalisation is about levelling that situation, then great for globalisation.

Razia Iqbal: We've got time for one more question, the gentleman at the back there?

Question 6: I understand that there's no sure formula for success, but perhaps a sure formula for failure is to try and please everyone. So my question for you is how, in your career, from Norman the architect to Lord Foster the architect, have you ever dealt with the situation where your opinion might have stood in the way of you making the right decision?

Norman Foster: I think that there have probably been times when our conviction has gone against us, because it's not been something that's perhaps found favour with somebody who is commissioning a building. But I think that in the...

Razia Iqbal: I think he's asking you if you've ever made a mistake?

Norman Foster: My god, more than I could count, yes.

Razia Iqbal: But, we are going to have to draw this to a close. It's been a hugely enjoyable experience. We've discussed the Gherkin in London, Beijing Airport, New York's Public Library, reinventing skyscrapers, reimagining historic buildings and so much more besides. Please now all of you join me in a warm thank you to Lord Foster.

Norman Foster: Thank you, thank you.