

# Architecture I: A Portal Into the City of the Future

**ASIF KHAN:** What I wanted to do with the portals was a very physical experience that people would transition through. But I also wanted it to be a philosophical experience. I wanted people to change the way they think about the place through walking through that door.

## MUSIC

**NOON SALEH:** Imagine that you are walking through an enormous gate made of fine lines of structure. The gate is 21 meters high and 30 meters long. And it is made of thousands of black paper-thin carbon fiber strands weaved together.

It is as if you are walking through a 3D Mashrabiya... immersed in its light, shade and airflow aesthetics.

And as you walk away, the structure's colors turn translucent... this remarkable portal transfers you into a courtyard filled with trees.

This is the main entrance to Expo 2020 Dubai.

**AHMED AI-KHATIB:** What will be the right entrance to enter the city of the future? Or the Expo of the future, you know, it needs to have the elements and the ability and the design and the innovation that actually it's like the book cover. The book cover tells you what's behind it. So we wanted to create this sense of arrival to enter the city and what will be better than actually have massive doors to enter the city of the future and the Expo.

**NOON SALEH:** This is Ahmed Al-Khatib, Expo 2020 Dubai's Chief Development and Delivery Officer. Ahmed oversaw the whole construction process of the Expo site, from when it was a master plan on paper. And the master plan always had the idea of a gateway that is like no other. A portal to another world.

The three portals at the tip of the three districts of Expo are identical, to give visitors entering from either side a similar experience. But also, for visitors to leave the site at the same high note as they entered.

**ASIF KHAN:** We started to look at the kind of ancient cities in the region and the feeling that to enter this, the "madeena," would need a gateway with a feeling of real threshold, a feeling of transformation. When you arrive, you become aware of it. When you walk through it you feel transformed.

**NOON SALEH:** This is Asif Khan, a British designer and architect. Asif is the mastermind behind Expo 2020 Dubai's Public Realm and entry portals. Three giant gates, each leading to one of Expo's three main districts: opportunity, sustainability, and mobility.

Today, we will come closer to the ethereal entry portals of Expo 2020 Dubai and how they were brought to life.

I'm Noon Salih, and this is Inside Expo, an official podcast of Expo 2020 Dubai, where history is being made.

### **[INTRO STING]**

**ASIF KHAN:** What would be the most pertinent way to invite people through? And I felt it had to be something with a great kind of regional familiarity, but at the same time something that... A new interpretation of, of that kind of regional idea.

So the mashrabiya felt like the right thing to be working with. It's something we always see in two dimensions, but it's got enormous power as both a sort of architectural element and also as a kind of symbol of identity. And my feeling was if we could sort of push this to the next level to make it into a three-dimensional space, so the journey through this portal would be... Well, you're journeying through an element of regional identity. You're actually walking through it. But the trick was to make it from a material that has never been made from before.

**NOON SALEH:** And from here, Asif landed the idea of using carbon fiber. With the help of extraordinary engineers and manufacturers, he devised a technique, where thousands of carbon fiber strings were meshed together in a 3D weaving process.

Carbon fiber is a light thin material, composed mainly of carbon atoms, while sustaining great strength and high tolerance to heat and chemical reactions. And because of its light weight and flexibility, it is typically used in industries like aerospace and race cars. Those properties also made it just the right fit for Asif's creative ambition.

**ASIF KHAN:** This is a very lightweight material, which means architecturally, if you use it, it allows you to do things that buildings should not be able to do. Like it allows you to make things feel like they're floating. Even though they're incredibly thin, they can support themselves. So that's the way we worked with this material. We made a mashrabiya using robotic winding technology.

**NOON SALEH:** The mashrabiya is a traditional Arab architectural element, typically made of wood and used as windows, to control the amount of sunlight and maintain airflow. They also cast a charming, ever-changing composition of light and shade throughout the day, just like Expo's entry portals do.

Those Mashrabiya-like portals are 21 meters high, so taller than a six-story building. And they span 30 meters long, without any additional support. The portals lead to

tree-filled arrival courts that have been meticulously composed. They lead you to the Public Realm, the main space of Expo 2020 Dubai, also designed by Khan. The design of the public realm interweaves landscaping, water features, especially-designed benches and meaningful lines on the ground. And those details are in the Public Realm based on a clear vision in Asif's mind.

**ASIF KHAN:** To bring a sense of soul to the Public Realm and for visitors to be able to come to a place that gave them new insight into local history, local ways of thinking, but also how Dubai is a kind of connector between different places, you know, this idea; Dubai is the conduit of cultures and ideas.

**NOON SALEH:** And the gigantic portals also have doors. Each is 10.5 meters wide.

**ASIF KHAN:** The doors of the portals, and of course they have those because gateways to city's always had doors. These doors are opened every morning at 9:00 AM. And if you're lucky to be there you'll see, I think a site that is very rare to have today, where something... Something of such a scale, such a kind of majestic appearance and size is moved by human power.

**NOON SALEH:** The doors are opened every morning, closed at night, then opened again the next day. And they were installed in the huge gates for a very specific purpose.

**ASIF KHAN:** The idea of a kind of ritualistic moment of welcoming and also sort of restarting the day is something that we forget is very important. We all live 24/7. Our cities are 24-hour cities. Our phones are always on. But this idea of a rhythm of opening and closing, I think, is very beautiful. And I think we tried to get that sense of kind of regional tradition and regional rhythm in Expo so that the visitors from all over the world could experience and feel a real sense of place.

You'll see some days the expo 2020 school groups are there opening the gates. Some days it might be a particular pavilion or an ambassador who comes and opens it from a particular country. As a tool for welcoming people. It's been really powerful.

### **MUSIC**

**NOON SALEH:** But the journey to produce something of that size... Something that revolutionary, could not have been a walk in the park.

**AHMED AI-KHATIB:** This was probably like the second or the third trial or idea for the entry portals. So, We actually had like two different designs for the entry experience to the Expo before reaching to, actually, an entry gate of that size. And this journey took many years.

### **MUSIC**

**ASIF KHAN:** Let me take you back to 2016. I'm in the room, presenting this idea for the whole public realm to Her Excellency, Reem Al-Hashimy. We've told the story of the different materials, the way you enter in the different plants you'll experience the water feature. The texture of the paving, what it feels like to be there for one day at Expo.

Some of those things we could already imagine and the Expo team could imagine how we would build those things. And, you know, even though they're very large, we could, we could put all the pieces together already. And then certain things such as the portals, they were at that stage really embryonic. They were dreams. Could we make this? We think it's possible from carbon fiber.

We think we can get this thin. This is what we think it could look like. But we needed the go ahead to embark on a process for those more complex items. And that was

a process of R and D (research and development), of prototyping, of mock-ups, of collaboration with engineers. And so that process began in 2016.

## **MUSIC**

**ASIF KHAN:** It's very rare in an architect's life. When you find yourself in front of people with an equal capacity to dream. And I found myself one day in 2016, in a room with Her Excellency, Reem Al-Hashimy - it was the first time I met her - and the energy in that room was electric. Very few words were said. I think there was a sort of pact at that moment that we, as a collective of dreamers, would put all of our forces and all our energies into making the impossible possible. We'd make this, these things we'd make this portal. We'd make this public realm come to life. We put every ounce of energy into doing so.

**AHMED AI-KHATIB:** The challenge was the production of those portals. It needed a lot of facility and a lot of equipment to build it of the size and within the timeframe.

**NOON SALEH:** And so, to turn the ambitious design to reality, the dream team was missing the craftsman. The team member that will get to the production hands on.

**ASIF KHAN:** There was a fantastic manufacturer based near Munich in Germany. One of the world's leading carbon fiber technology specialists, and they've developed machines that can weave the carbon fiber in very large components, which are normally used in the shipbuilding industry for masts and so on. And they're very positive and very collaborative people. And so they saw it with an equal level of fascination and came on board as collaborators to help us, to help Expo bring this to life. They believed in the dream as much as, as much as we all did.

**NOON SALEH:** And then there were three: Expo 2020 Dubai, designer and architect: Asif Khan and the manufacturer. What they still needed was a structural engineer.

**ASIF KHAN:** Now what we wanted to do was to create something which used the least material possible, was the most open, so visually porous, but at the same time provided as most shading that we could provide. But attracted the least wind resistance, which meant essentially you can build it higher without without it kind of encountering too much stress from the wind. And this kind of factors, of material, quantity, shade, provision, and porosity... Those factors together form a kind of equation.

**NOON SALEH:** And this equation is beyond the scope of a normal structural engineer. So Asif turned to a formula one engineer, who builds race cars from carbon fiber. They brainstormed, built prototypes and refined computer models, but Asif was convinced there was still an extra mile to go.

**ASIF KHAN:** And I felt as the architect, we hadn't gone far enough. We hadn't gone far enough towards the dream. It wasn't thin enough. It wasn't light enough. It wasn't... it didn't appear as something from another world at that point.

**NOON SALEH:** But seek and you shall find...

**ASIF KHAN:** And this guy, his name is Calin Gologan, and he's designing lightweight carbon fiber drones that can stay in the air for six months and they're solar powered. So that's his kind of background. We asked Calin to start looking at this structure. But look at it, not as a piece of architecture, but as almost a piece of aviation, like really, really, go to the limits of what this material can do.

## **MUSIC**

**ASIF KHAN:** With his help we reduced the final, the weight of the structure we increased the amount of porosity. We increased the ephemeral appearance of it. And we got to that. that we had always been wanting to get to.

**AHMED AI-KHATIB:** It was extremely exciting, really to see, I personally wanted to see it built, you know? It's very interesting, very complicated. It's very new. It's totally different. Science of engineering, dealing with carbon fiber.

Once we finished the first one, it was really like, Oh, my God, this is something that is going to be a big, big, hit in the architectural and engineering world. It's an amazing unique experience that gives you a different experience. It depends on the time, which time of the day, whether it's like the sunset sunrise during the daytime or nighttime, with a beautiful lighting we put tonight is just like something extremely beautiful.

**NOON SALEH:** The work on the portals took about two years, between the research, developing models and refining prototypes, until the final manufacturing stage.

**AHMED AI-KHATIB:** We had to do a lot of different trials, a lot of different patterns, to ensure that those portals actually will be able to, to stand the weather, in UAE. We built a real size section in Germany. We left it there until a massive storm hit in Germany, actually. And we had to do some changes after of course the storm.

## MUSIC

**ASIF KHAN:** It was a manifestation of what Expo is all about, which is innovation collaboration. But also it's something about regional pride, right? Like when an expo happens in a place it's incumbent on that place to demonstrate that they have. The secret sauce, you know, they have the ability to dream big and to show



the world something that's never been seen before. So, challenges were overcome, the people did come on board. The collaboration did succeed.

**NOON SALEH:** The portals were designed and built to set the ground for the Expo experience. It is the first thing you see from afar and the first bit of Expo you come across. But that's not all. As a supervising engineer, Ahmed Al-Khatib had another function in mind.

**AHMED AI-KHATIB:** We actually looked at how we can make the arrival experience more and more cozy. It's more of like arrival Plaza, in a very contained area that is landscape, that you have the full services around you. You can even buy coffee and sit down before you decide to enter.

The portals were the cherry on the cake where you even can enjoy more and more of your arrival experience by sitting and enjoying that. Which actually helped in reducing pressure on the security gates. Because a lot of people that arrive there have a reason for them to stop: "oh let me take pictures here and there," while more people go through the arrival security gates. So it works really amazing in terms of a full, seamless experience for the visitors. Because it was more of a welcoming experience holding area without actually feeling that you have to stop here.

**NOON SALEH:** And to Asif, the artist and architect, the portals are not just a huge structure of carbon fiber, as cutting edge as it may be.

**ASIF KHAN:** All those kids, thousands of children, the day that they come from the Expo School Programme, all of those tourists, all of those Dubai residents, everyone who visits the expo, and walks those portals. I want them to get a piece of that dream and my wishes that it would inspire them to make, to keep dreaming in their own life. And to make the impossible possible.

## MUSIC

**ASIF KHAN:** All of us are going through life on a journey, and I think particularly if you're a creative person, part of that journey is discovering who am I? And how does the creative work that I do reflect me. And I think I've been striving. I didn't realize this until I started to participate in the Expo project. I've been, I think, striving to identify myself to get closer to what I'm about.

And I felt through this work and in particular, the portals, I've got the closest so far to understanding who I am. And I think this was really the crux of the project to me. Once it was built, it resembled me in some way. These portals are not just symbols of expo, but they're in a way my expo there, me exposing myself and an exposition exploration of what am I about. And how can I better connect to root myself to a particular place in a region.

**NOON SALEH:** This episode is your stepping point to a series on some of Expo 2020 Dubai's architectural marvels. In the next episodes you will get to know all about the extraordinary Al-Wasl Dome and the Surreal Musical Waterfall.

Inside Expo takes you behind the scenes at Expo 2020 Dubai, sharing our stories and others across the 170-year history of this global event. Learn more by visiting [VirtualExpoDubai.com](https://virtualexpodubai.com).

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