

The Evolution of Robots

ARCHIVE [Elektro at NY World Fair] (Announcer)

The thing with almost a human brain, Elektro the robot! You asked for it. (Elektro) I am Elektro, mightiest of all robots. I was created by Westinghouse. (Announcer) I'm going to put this toy balloon in your mouth and have you blow it up for us.

NOON SALIH: This is Elektro the robot, one of the most exciting attractions at the New York World Fair Exposition of 1939. Elektro was so popular in fact, it even starred in a movie in the 60s decades later. Clearly, he made quite the lasting impression.

CHARLES PAPPAS: You have this imposing creature, with his little dog Sparko, who could bark and roll over.

NOON SALIH: This is Charles Pappas, senior writer at Exhibitor Magazine and author of the book about Expo world history titled Flying Cars, Zombie Dogs, and Robot Overlords.

CHARLES PAPPAS: Elektro, invented by Westinghouse, 7 feet tall, about 300 pounds or so. One of the funny things is that Elektro could smoke. And it can talk too, it has a vocabulary of about 700 words. Why show this? Why does this matter?

NOON SALIH: The reason was not at all random. In the years leading up to the New York World Fair the fear of machines taking over human jobs was growing. More broadly, there was an atmosphere of anxiety around technology becoming too smart or too dangerous especially in parts of the world where tensions were

brewing. And so began the humanizing of this mechanical, moving, thinking tin man, as a way to assuage the panic.

CHARLES PAPPAS: It will serve us. It will not have power.

NOON SALIH: Much of the 1930s were tainted by the Great Depression - a time of financial uncertainty and job insecurity. People were scared - and legitimately so - of anything that potentially can threaten their livelihood. There was a hype about automating the agriculture industry and putting farmers out of work, for example. Factory jobs were becoming less manual and even artists felt at risk.

CHARLES PAPPAS: Around 1930, the American Federation of musicians started a lawsuit. They spent half a million dollars in those days at the Depression to stop robot music, meaning simply recorded music that would be played in movie theaters and other places, and deprive live musicians of their livelihood.

NOON SALIH: Basically what happened at the time was that this federation - the union that represented musicians - was worried that machine-made music would ruin the careers of artists who counted on live performances to make a living. Jobs were already hard to come by so the organization created the Music Defense League to protect their interests, and spent huge sums of money to run newspaper ads warning about the evil robots destroying artistic progress.

But manufacturers and visionaries of future innovation wanted to change the age-old, infamous narrative of the terrifying, human-crushing robot.

CHARLES PAPPAS: These are the early days of figuring out where robots fit, how much in advance should we prepare people for what robots or automation, if you will, are going to bring to culture.

NOON SALIH: And so, World Expositions became a popular platform not only to showcase what robots look like and what power they hold, but also to help us understand how and why they have evolved to fit into our human world.

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

[INTRO STING]

NOON SALIH: Self-operating mechanical feats of engineering date back hundreds of years, such as the famous elephant clock created by Ismail Al Jazari in the 12th century and the chirping, mechanical birds built in Middle Eastern palaces of the 9th and 10th centuries. Even ancient Greek mythology contained descriptions of mechanical creatures.

In more recent history, in 1930s America, Elektro was actually not the first robot to make an impression. It had a predecessor, and it wasn't exactly the friendliest of machines.

CHARLES PAPPAS: It was one called Alpha, which appeared in 1935 at the California Pacific International Exposition in San Diego. Alpha was an invention of a guy named Harry May. It was supposedly a one ton automaton. Alpha was this huge creature that could talk probably through a radio control from a confederate hidden behind the scenes. But what it would do is say things like "I don't love nobody and nobody loves me." And it was known for supposedly shooting its creator, Harry.

NOON SALIH: Actually that was said to be just a rumor. It very likely didn't really happen.

CHARLES PAPPAS: The robot could shoot a gun, but what happened is the inventor, Harry May was putting a cartridge in the gun in the robot's hand. It discharged, burned his hand, no significant injury. But It got exaggerated, like a game of telephone. What it shows really is the anxiety over automatons.

NOON SALIH: Come 1939 when Elektro made its debut at the World Fair in New York, robots slowly began to present more comforting qualities.

CHARLES PAPPAS: This plays out through the history of robots in world expos. So it has had a positive influence in many ways and began that process of how shall I say, thinking about. What role should these creatures have? If indeed they can match humans for intellect and certainly exceed them in their physical durability.

MUSIC

CHARLES PAPPAS: Here's where it gets kind of cool. This is where the large ones become less mobile. It can't move, attack, confront. Now by the same token, human-like robots, audio animatronics, have a very kind of convivial friendly appearance. They talked about, progress of humankind going from inventions in the 18th and 19th century, to robots and high-tech today.

That was extended to the robot pavilion at Expo 70 in Japan, when they had smaller robots that are talking about the history of progress. That's when it really begins to change.

NOON SALIH: At successive World Expos and Specialised Expos, the function and purpose of robots continued to morph. Even their shapes began to shift, changing the way we define what a robot even is. For example, take the Specialized Expo in 1982.

CHARLES PAPPAS: At Expo 82 in Knoxville, a Japanese pavilion had an arm, just a robotic arm, not the whole creature that could paint and do calligraphy. Heinz Ketchup had a robot of sorts that was like a human size bottle of ketchup. Certainly condiments are not threatening. Expo 2005 in Japan, you had Asimo, roughly 4 feet tall, that looked like a man in a little white space suit.

By the time you get to say, oh, Expo 2010 in Shanghai, you have the Nao robots. And they could sing, dance, play jazz, talk in French, Chinese, and English. They could play soccer. But they were really tiny little things, very thin arms. So they don't look, again, muscular and powerful.

They're going smaller and they're going to stay that size kind of like Peter pan. They're never going to grow up.

NOON SALIH: Pop culture was also reflecting this shift as far back as the 60s sci-fi film, 2001: A Space Odyssey. And then of course there was Star Wars.

CHARLES PAPPAS: You have R2D2, tiny. You have C3PO, kind of a fuss bucket, but certainly not macho. Those two start to change the way we want to perceive robots, how we want them to be around us.

And I think that manifested itself in what we saw at World Expos. Expos reflect not just where we are, but perhaps where we should be. And I think with Expo 2020, they're getting to that better point.

MUSIC

ESSA ALZAROONI: Comparing past expos, from Elektro the first robot to smoke cigarettes in 1939, to the multi-lingual and Actroid, the receptionist in 2005, which

happened at an Expo in Japan, this is the first time the world has witnessed 152 robots distributed site-wide, interacting with visitors at an Expo.

NOON SALIH: That's Essa Alzarooni. He's the Assistant Manager of Visitor Experience at Expo 2020 Dubai. Part of his job is to oversee the various activations on site - which includes the deployment of all the different Expo robots.

In a space that spans almost 4.4 square kms, this is not exactly an easy feat. There's the challenge of finding enough sockets to charge them but also of ensuring they're making the impact they were built to have.

ESSA ALZAROONI: Having a site this big does leave gaps throughout the site. No matter how many activations and experiences you put on site, the visitor might feel like there's a place that's empty. To create a good rhythm and a good journey for the visitor to experience, we placed those robots in areas where the robot can interact with the visitor. It's not an activation it's roaming around. So it basically fills the gap.

NOON SALIH: But having robots scoot around also means that perhaps unlike any other Expo before, it was impossible to avoid them. They're essentially part of every visitor experience. But this actually posed another challenge for Essa and his team.

ESSA ALZAROONI: We do have a lot of activations on site and we have to ensure not to overwhelm the visitor.

We had to really carefully look at where we should deploy them from a visitor experience perspective and from an operational perspective to avoid any clashes. From an operational perspective, everyone, like the departments, were kind of hesitant about having this many robots roaming around interacting with visitors

because it interferes with the buggy routes, as an example, with the train routes that we have onsite with the EVA routes.

NOON SALIH: EVA, meaning Emergency Vehicle Access routes. This balancing act took a lot of planning but in the end, the robots at Expo 2020 Dubai turned out to be a hit.

ESSA ALZAROONI: Seeing them on the news, stealing the show with expo is something we didn't expect to be honest.

MUSIC

NOON SALIH: There are four types - some of which are mobile, and a few of which are stationary. The attendant robots are much like information guides, acting like a concierge to the visitors.

ESSA ALZAROONI: We have the delivery robot. We were trying to avoid to constantly add signage throughout the site, because we do have a lot of signage. To make it easier for our visitors to navigate, we tend to deliver those visitor maps. And the robot can approach a visitor to ask him if he wants a map.

NOON SALIH: Then there are the patrol robots that go around making sure everyone is adhering to COVID-19 safety protocols.

ESSA ALZAROONI: It gently tells you to put a mask on. So if a visitor is misbehaving or doesn't have a mask on it can approach the visitor and put on the sirens.

Finally we have the Optis. Those are mostly for entertainment purposes.

The way we designed the Opti as an example, was to mimic the opportunity mascot. So it's basically bringing our mascots to life for them to interact with our visitors, to tell jokes to our visitors to quiz our visitors, leaving them with smiles around the site.

It's definitely one of the, one of the most attractive installations. Seeing the Optis rise this much honestly, it means a lot. Like kids literally hugging an Opti or some of them even kissed the Optis. I mean, we sanitize them on a daily basis. We don't advise someone to kiss an Opti! But seeing the emotion that the kids and families have towards those Optis is fascinating.

NOON SALIH: There are 50 of them rolling around, performing choreographed flash mob dances and mingling with passersby.

Opti, as you might have heard in our Mascots episode, is the Expo 2020 mascot representing the theme of Opportunity. The other two characters, Terra representing Sustainability and Alif for Mobility, are flying mascots, and even though there are drone versions of them, for safety reasons they don't roam around the site like their grounded friend.

But that's not to say that their themes weren't integrated within the Expo robots.

ESSA ALZAROONI: Every part of the robots are recyclable other than the battery component. The robots can promote sustainable development goals, which are direct representation of all themes: sustainability, mobility, and opportunity, themes in both the content, the material, and also the technology behind them.

MUSIC

NOON SALIH: The way Essa speaks about the robots, about their personalities and even their social skills, it's hard to imagine a time when Alpha or even Elektro lived just on display for the public.

ESSA ALZAROONI: The technology behind those robots are developing even further and further. At this rate, they would definitely be of more help and support to us humans in the near future.

NOON SALIH: This was the point Charles was making when he said Expos mirror not only the present but also the future. And this Expo is paving the way for robots to become.. well, actually, the norm.

CHARLES PAPPAS: Here's where the difference is in Expo 2020. They come out to meet you. You don't go to meet them. They're on the grounds they're walking around.

Children grow up now thinking this is normal to have a robotic creature that can talk to you. That is the mark of progress in robot human relationships: robots coming out to interact with you, pass you by on the many streets and byways of Expo 2020, and it's normal! It doesn't really become remarkable after a certain point.

MUSIC

CHARLES PAPPAS: Expo is showing you that they can be integrated into anything. It can be in the wall. It can be in a twilight creature, it can be in a doll. It can be in a food delivery cart. It doesn't really matter.

ESSA ALZAROONI: We have been using those robots to gather data as an example, to better the experience of the visitor onsite. An example would be that

optics collect the question, asked by our visitors and help us understand what the visitors are doing. So this definitely could be used in the future to create smarter cities, smarter futures, and smarter technologies.

Now robots can help you read data better, but cannot replace your emotional intelligence and human interaction.

CHARLES PAPPAS: There's kind of a bit of magical thinking there that when we see them act like humans, there actually is a thought process going on in there of some kind. We're back at that point where it reflects back to us, our humanity or what we think humanity is except it's not biological. It's mechanical. It's born of our ingenuity and chips and steel and Silicon.

ESSA ALZAROONI: Robots and humans are meant to co-exist. There are certain actions that robots can do that humans can't and vice versa. Those robots will enhance our way of life through better productivity and efficiency.

CHARLES PAPPAS: Ideally in the long-term sense, robots free us up for more leisure in culture. They take us away from jobs that might cause repetitive stress disorders in the wrist or the shoulder. They could do dangerous jobs.

If robots replace us for that, is that really dehumanizing or is it humanizing us better in the long term?

That's where we've progressed with robots. And that's what World Expo has reflected in the way it's incorporated robotics and on the whole much for the better.

NOON SALIH: 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.

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