



Robots in Captivity

Script for Science Show targeting youths between 18 to 20 years.

Educator Welcome everyone! Let me introduce myself. My name is ___. And if you are sitting comfortably, I'll show you our new technologies. Different kinds of robots. What they can do, how they work, and what robots really are.

OMEN Me too!

Educator Of course, you too. Introduce yourself.

OMEN My name is OMEN, I'm a digital robot. I live here, at NEMO. After travelling all over the world on the web, I now work here. This is the first time I'm allowed to give a demonstration.

Educator That's right, and I'm really happy to do this with OMEN. Me and a robot. This is really the first time. But it's always a bit exciting. So let's start.
Lights out, spot on.
Why isn't it working?
Let's try it again.
Lights out,...

OMEN Wait, there's a bug in the system. Let me start it again.

Educator Okay. Uh, what should I be doing?

OMEN Have a look backstage.

Educator Of course. I'll be right back.

OMEN All together now: 'Lights out, spot on!'

Audience Lights out, spot on!

OMEN 1, 2, 3...
Lights out, spot on!

Educator But now it's gone dark. OMEN, something went wrong.

OMEN I thought I felt something in my database. There's a syntax error in the voice commands. I'll never get them back into a logical string of zeroes and ones.

Educator So how can we fix it? Maybe you can improvise something. And I'll see if I can get things back to normal.

OMEN Uh, okay. I'll give it a try.

Educator I'm sure you can do it, OMEN.
To the audience
Do you think that OMEN can do it too?



Audience YES!

Educator Right on. OK, so good luck, OMEN. And I'll be right back.

OMEN Okay. Thanks.

So, he's gone. Perfect. You don't need to know how we work. But I want you to know who we are.

Once we were uncommon, but now we're everywhere. Robots. All around you, we're here to help. We help with the washing-up, cutting the grass and hoovering, we're fun toys you can talk to and laugh with. We're also factory workers and work non-stop doing anything you want.

When I came to NEMO, I asked some other robots to join me here. I met them on my world travels. I want to introduce them.

This is the Hogan family. These little robot cars that you see in the cages I met for the first time in Irkutsk, Russia. Have a good look. The Hogans were real pests. There were a couple of them in every attic, chewing through cables, always fighting, and making so much noise it was impossible to sleep at night. I rescued ten of them from commercial traders. They wanted to sell Hogans for illegal cock fights with biogenetically modified roosters. Some of them are still in top condition, but a few others have given up.

At the end of the last century, I travelled to America with the transatlantic fibre optic cable TAT-8. A fantastic trip to the place where a new species had been discovered: the Ululatus Furby. A small furry robot. I helped Professor Hampton with his study of this unique species. This professor studied these creatures' language, and wrote the first English-Furbian dictionary. We did vivisections and dissections of Furbies with this lab equipment. Who knows, maybe one day this research will be as important as Darwin's, when he developed his theory of evolution.

In this cardboard box is Josephine. Josephine, will you come out? Josephine?
Can you help me call her?

1, 2, 3

Together Josephine!

OMEN I met Josephine, this elegant robot arm, a year or two ago on the streets of Brooklyn, New York. She was living and dancing on the street. Every day she transformed her cardboard box from a place to sleep, to a place to dance.

Since then she's found a home with a business in New York where she works for a dollar an hour as a junior employee. By dancing she welcomes and inspires visitors and staff with her charms and elegance.

Then there's Neo. Neo is a totally different story.

I remember it clearly. The 15th of October 2021. That's right, I was there when Neo was born. It was 3:07 PM on a sunny fall day in the robot lab of Vrije Universiteit Amsterdam. Even in the sterile environment, the father (with the 3D printed blue checks) and the mother (with the 3D printed green checks) couldn't keep their pheromones and testosterone under control. They began a carefully planned mating ritual. DNA and codes were exchanged, 3D printers began to hum, computers wrote software, robot arms went to work, and after four hours the first robot baby was born without the intervention of someone like you, without people.



I'm happy that I could introduce these great robots to you. That I could tell you this story on my own, without human help.

Museum Educator returns.

Educator Sorry it took so long, but I really couldn't find anything. Did it work?

OMEN Absolutely. I introduced the audience to the robots here on the stage.

Educator Good work. So everything went okay?

OMEN Yes, everything worked.

Educator Oh, really? Great! Then I want to have a chat with the audience.

OMEN Fine with me. I'm off then. I have to polish up some data.

Educator Okay, good idea. I think that we should give OMEN a round of applause.

OMEN Thank you! Bye-bye.

Educator So now I'm curious to know what he showed you.

Child We saw a dancing robot. From Brooklyn, on the streets of New York City. Who was dancing there. And then working for a dollar an hour.

Educator Right, Josephine in the box. The one who dances.

Child That robot was born on 15 October 2021 at 7 minutes past 3.

Educator Very good. Wow. Neo, that's a robot who was born.
Now I want to ask something about each robot.
These are the Hogans, but they're in cages. Is that sad?

Audience Yes.

Educator Somebody put up a hand.

Child Sad, but I can understand why. They cause trouble. But it is sad that they have to be in such small cages. That they can't go anywhere.

Educator And some have given up. Yes, that happens sometimes. What do you want to say?

Child I think they look pretty sad, because they're also tied up and they keep going up and down.

Educator Right, they're tied up and can't go anywhere.

Child I think they look a bit sad.

Educator Who doesn't think they're sad?
You don't think they're sad, because...?
Not, because they are tied up and can't move around. Is it really not so sad?



Child I do think it's sad, but at least they are together.

Educator They're the Hogan family and at least they're together. That's true.
Then there's another robot here.
These robots were a nuisance; this robot was made by robots. Neo's parents made Neo.
What do you want to say?

Child It was made by 3D printers and codes. Not in the normal way.

Educator That's quite unusual, isn't it, because normally we say: living things can reproduce.
That's a definition for when we say something is alive. Because it can make baby robots, it
can reproduce itself. Now robots can make robots. Does that mean they're alive?

Audience No.

Educator No? Who doesn't think so?
Raise your hands.
They're dead.
Why do you think they're dead?

Child I don't think they're dead. I mean, they can't think, they're controlled by people.

Educator They were made by robots and can learn. And those robots learned so well that they
were able to make this robot. And Neo can also learn by himself, and so keep getting
smarter.

Child For me a living thing has to have feelings. But bacteria are a life form, but they don't really
have feelings. But to me a living thing has to be able to learn.

Educator You say a living thing is something that can learn.

Child That can learn and evolve.

Educator That is exactly what these robots do. That's confusing. A living thing, that can learn
and evolve. Capable of self-development. But that's exactly what these robots do. So I agree
with you, but I still think it's a bit confusing.

Child It's dangerous. Imagine that robots start to hate us, they could make more robots to destroy
us.

Educator That's a good point. Imagine there are more and that they're evil, they could destroy
us. So do you guys think it's a good idea if robots make other robots? Who thinks it's not a
good idea? Who thinks it's a bit scary? Raise your hands.
Good, put your hands down.
And who thinks that it's not a problem? If robots make other robots.
Let's see.

Child We are much stronger. So then you have to take a hammer and we can smash them.

Educator So we are much stronger and we can smash them if there are too many. Are we
stronger than robots? That's a really good question.



If they can make themselves, maybe they will become stronger.
Imagine that there are lots and lots of robots, lots and lots of Furbies.
Could you make friends with a robot? What if they keep getting smarter?
Who would want that?
No, not a Furby?
You would?

Child Yes. Because if you talk to them a lot and say nice things, they will be nice too. But if you say mean things to them, hopefully they wouldn't say that next time. If you say it the next time, then they will be angry.

Educator Right, it's a robot that learns.
If you are nice to a robot, the robot will be nice back. Maybe then you would create good robots. And then it would be fun to be friends.

Child If you are friends with them, they would also be friendly and then they're not so scary anymore.

Educator That's right. Once you get to know them. Something you don't know is always a little scary. And once you get to know them...

Child I don't really think robots will kill us. What would they get? More like they see us as ants.

Educator Robots will see us as ants.

Child If robots can learn, then one thing is certain: Robots are smarter than us. If they can learn.

Educator If robots can learn, there is a big chance that they will get smarter.

Child And then they can kill us. Like we can kill pigeons. But we don't kill pigeons.

Educator That's a good point, as you said. Robots could become stronger than us, but they won't kill us because they won't gain anything. But you're talking about having a conscience. We don't kill pigeons even though we're stronger. But that's because of our conscience. Because we know what would happen. So if robots would have a conscience that they develop the right way, there's no problem.

Child The reason that robots can't conquer us is that we programmed them. And they have no feelings, so they have no reason to be angry at us or take over the world.

Educator Robots have no feelings and they're programmed. We programmed them so that they can't become evil.
The scientist who was here with Neo said that these robots are made and they do things because they have AI, Artificial Intelligence, that they couldn't predict. So the robots made by other robots are not programmed by us.

Child That's really scary.

Educator Maybe that is a little scary.
What do you want to say?



Child If it's nice to have a Furby friend. I think it would be fun. I think it would be more a pet than a real friend.

Educator So more a pet than a real friend.
Like Josephine, for example.

Child I think so.

Educator Is it sad that she's in a box? Like the robots in cages?
It's not sad?

Child I think they said that she had made herself. And I think she can get out. I don't really think it's sad.

Educator It's not sad, because she made the box herself.
What do you think about robots earning money? Josephine earns real money.
Is that a good thing?
Who thinks it is?
And who thinks it isn't?
You don't think so?

Child They're programmed. Animals have feelings, I think.

Educator Animals have feelings, then it would be sad, but robots don't have feelings. And they also don't need to earn money. It doesn't matter to them anyway.
These are interesting points that you all made.

Child About robots earning money. They don't really do anything with it. So if you want to give a robot money – because they don't ask for it – you can. They can't make a sign saying "give me money".

Educator Not yet!
Robots are not yet smart enough to ask for money or do anything with it.
The point of this demonstration is to get you thinking about robots and especially the relationship between humans and robots. Because it's a fast-moving topic. These are all questions that we will have to think more about in the future.
Thank you all for coming and have a great day! Thanks very much!