



SCIENCE
MUSEUM

ROBOTS

THE 500-YEAR QUEST TO
MAKE MACHINES HUMAN

A touring exhibition from the Science Museum

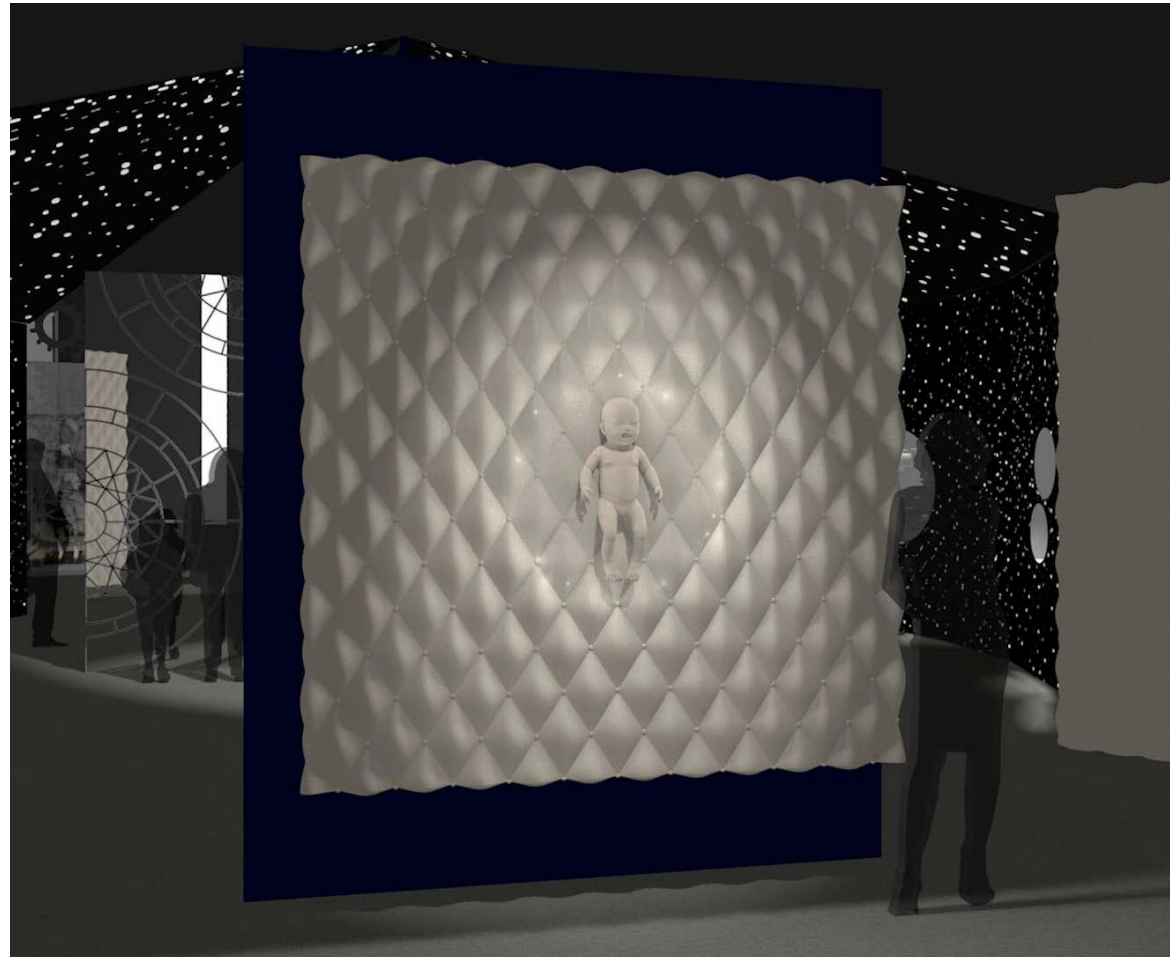
A touring exhibition from the Science Museum

Robots is touring nationally and internationally as a turnkey exhibition with the following features:

- Theatrical set, lighting and soundscape creating 5 distinct environments
- Over 100 historical and contemporary objects
- 13 working robots
- 6 audiovisual projections
- 13 videos

Venue information

- Suitable for venues with climate-controlled indoor display space of c. 750 m²
- Minimum height requirement for ceilings is 3 metres



Exhibition principles

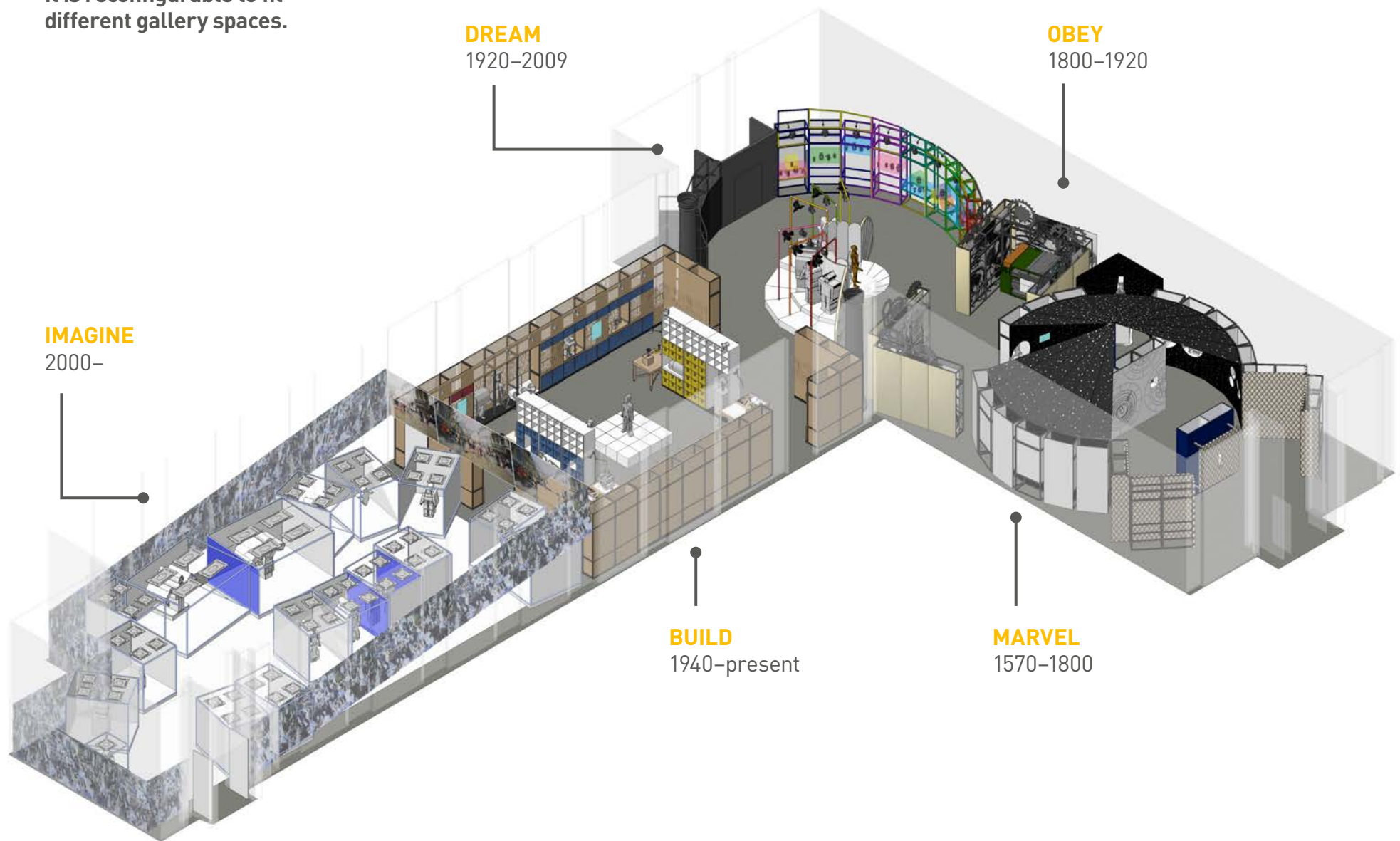
The exhibition reflects immense popular interest in robots. In order to address this, we have developed an intriguing content scheme that is built around the following key principles:

- **This exhibition takes a long view of robots.**
In contrast to the 'expo' style commonly adopted for the subject, our story begins with the first mechanised human forms of the 1500s.
- **The exhibition takes a human-centric approach.**
We focus on the humanoid, the human body and our uniquely human desire to re-create ourselves. Throughout the exhibition we expose how wondrously complex humans and explore how humanoid robots reveal who we were in the past, who we are now and who we may become.

- **The content offers a privileged view.**
Exploiting our unique access to current practice, we present a selection of contemporary robotics to replace visitors' science-fiction-based view with genuine insight into the huge scientific and technological challenges roboticists face.
- **The exhibition explores robots' social and ethical implications.**
People remain at the heart of this exhibition as we bring to the fore those who have commissioned, built, worked with or been in awe of robots from 1500 to today.



This is a linear exhibition of
750 m² composed of five zones.
It is reconfigurable to fit
different gallery spaces.



MARVEL

1570–1800

During this period, people created wondrous machines that deconstructed and imitated life as a means of understanding their place in the world.

Influential figures were attracted by the possibilities and imaginative potential of robots. The wealthy and intellectually curious constructed cabinets of wonder that might have contained automaton animals or insects. At the same time, anatomical models and even clocks posed deep questions about whether the human body itself is a machine.

Using a rich array of intricate objects, this section transports visitors back to a time when the creation of human-like mechanisms was among the first steps towards understanding of our place in the world.



Automaton lathe

Highlights

3 videos and approximately 35 historic objects including:

- Articulated and mechanical limbs dating from as early as the 16th century
- Ornamental automaton lathe
- Collection of orreries and clocks



Artificial arm



Striking table clock





Marvel

The section provides a dark atmosphere with a 'starry night' canopy. The objects are displayed to convey the intrigue and mystery of the time period.

OBEY

1800–1920

In the 19th century, when the Industrial Revolution thundered and roared into life, the world became increasingly machine-like and human life even more automated.

The start of this transformation came from many sources, and the chess-playing automaton Turk, built by Wolfgang von Kempelen in 1770, caught the wider public imagination. The Turk played and beat all human challengers and raised a fundamental question: if a machine could play a complex game such as chess, surely it could weave cloth or spin cotton thread, too? Even though the Turk was ultimately revealed as a fake, this question led to the huge industrial machine of 19th-century Britain. Machines were imbued with lifelike properties, human workers treated like machines, and the rhythms of human life increasingly mechanised and automated.

Human beings' place in an inhuman world was being seriously questioned at the turn of the 20th century, as the industrial-scale slaughter of the First World War gave way to dissent, depression and revolution.



Northrop single-shuttle 'S' loom

Highlights

- The centrepiece of this section is an imposing single-shuttle loom surrounded by two large-scale projections
- Large-scale immersive and impressionist projection of the automaton Turk and an environment evoking a 19th-century factory





Obey

This section immerses the visitors in a factory-like environment, to convey the sense of being just a small cog in a huge and impersonal industrial machine.

DREAM

1920–2009

During the 1920s, the archetypal robot – a towering, broad-shouldered figure – was created. The idea of robots as giant tin men rapidly entered the public consciousness. The form they took was as much the province of film-makers, cartoonists, designers and artists, as it was a central subject of science and technology.

These robots were proposed to help with household chores, vacuum carpets, wash clothes, carry out errands and gardening jobs, and even take the baby for a walk.

Hope for the future was given physical form through these humanoid robots as seen in the figure of Maria, the first blockbuster robot and central character in Fritz Lang's 1927 film *Metropolis*.

In this section, visitors see the new optimism of the post-war era, as expressed in new robotic forms.



Directional robot



Cygan



Toy robot



Eric

Highlights

2 videos and approximately 55 objects including:

- Cygan, a humanoid robot from the 1950s standing 2.5 metres tall
- A re-creation of Eric, the first British robot, originally built by Captain William H Richards in 1928
- Replica of the Maria robot from Fritz Lang's 1927 film *Metropolis*
- Archive material shown on videos, bringing the objects to life





Dream

This section includes a colourful 'cultural explosion' with 26 toy robots and other collectables such as film posters, books and record covers to emphasise the extent to which robots have entered the public realm.

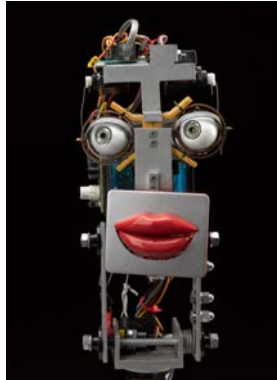
BUILD

1940–present

For years, humans dreamed of creating mechanised beings that resemble us and are capable of coexisting and interacting with us in lifelike ways. Technological innovations of the 1950s allowed scientists to explore this possibility, leading to the rise of robotics as a field of study.

Over the last few decades, researchers have concentrated their efforts on developing the technology that could allow robots to experience and respond to the world as humans do.

This section will explore the complexities of creating humanoid robots capable of the simple tasks we take for granted, emphasising just how amazing we human beings truly are.



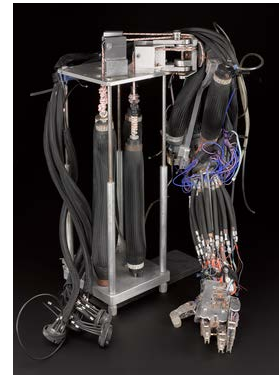
Inkha



Bipedal Walker



Sound Activated Mobile (SAM)



Metal robotic hand with air-muscle-powered arm

Highlights

4 working and 28 static objects including:

- Sound Activated Mobile (SAM), built in 1968, the first moving sculpture that moved directly and recognisably in response to what was going on around it
- Bipedal Walker built in 1988, actuated by air muscles and capable of active balancing and taking a step
- Inkha, the robot receptionist, a working robot created in 2002 that interacts with visitors
- 6 video interviews with robotics experts





Presented in a workshop-like setting, this section provides visitors with a behind-the-scenes glimpse into robotics research and offer encounters with famous experimental robots that mimic human abilities.

IMAGINE

2000–

In 2013, humans willingly invited 4 million personal service robots into their homes. The International Federation of Robotics predicts that this number will rise to over 30 million in the coming years. Experts predict that by 2025 robotics will pervade nearly every aspect of daily life. As technology advances, even more robots may take humanoid form and exhibit increasingly human-like behaviours.

As robots advance and their roles and responsibilities increase, they might become societal actors in their own right. What would a future of coexistence with these robots be like? What are our hopes and dreams for a shared future and who will dictate the terms? It is not too soon to begin negotiating the terms of our coexistence with robots.

This section brings visitors face to face with some of the most advanced real-world robots. It leaves a lasting impact on visitors by projecting them into the future and encouraging them to explore a shared tomorrow with these mechanical forms.



Nao Evolution V5



Harry, trumpet-player robot



Robina (Robot as Intelligent Assistant)



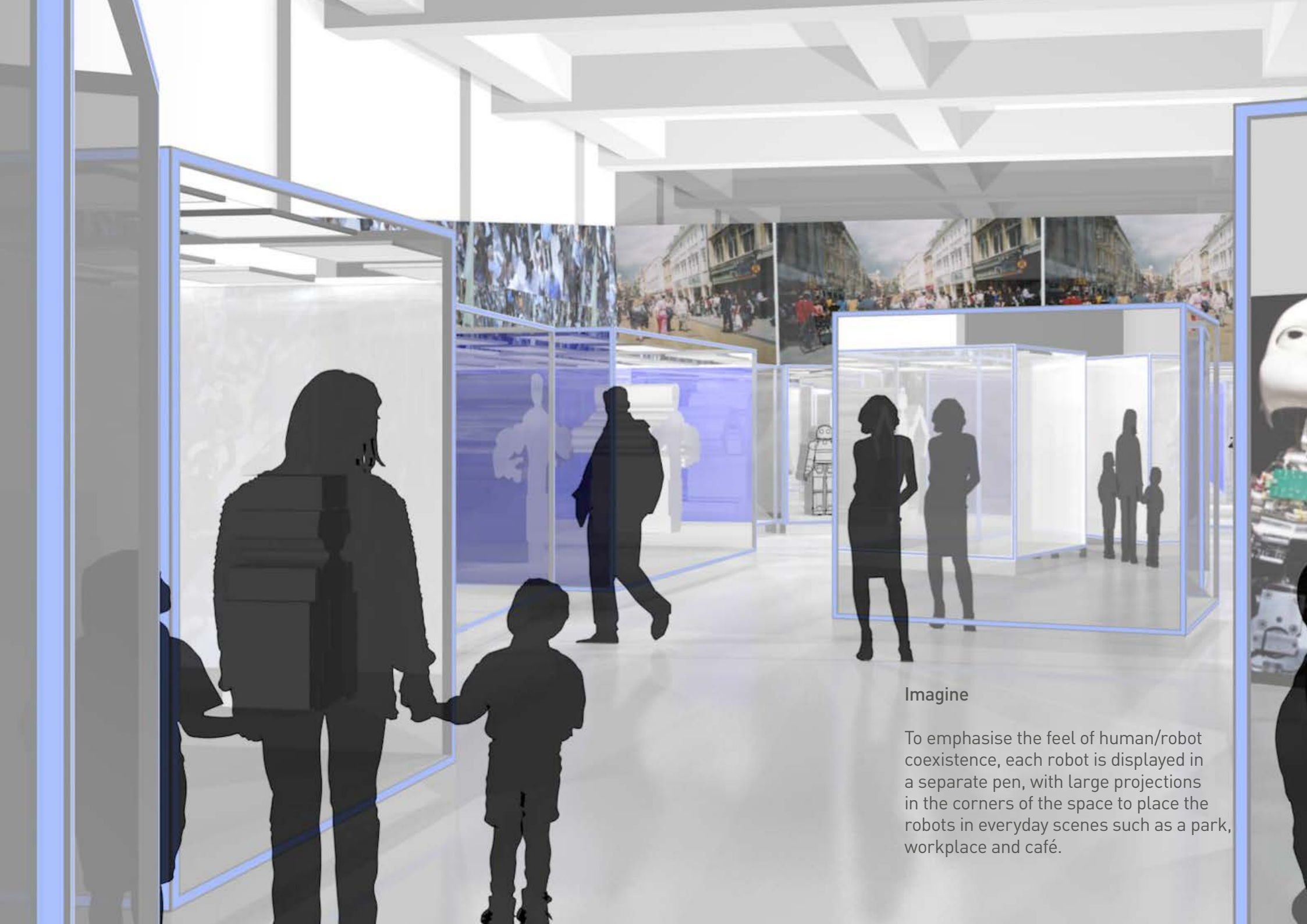
Zeno R25 social robot

Highlights

8 working and 9 static robots including:

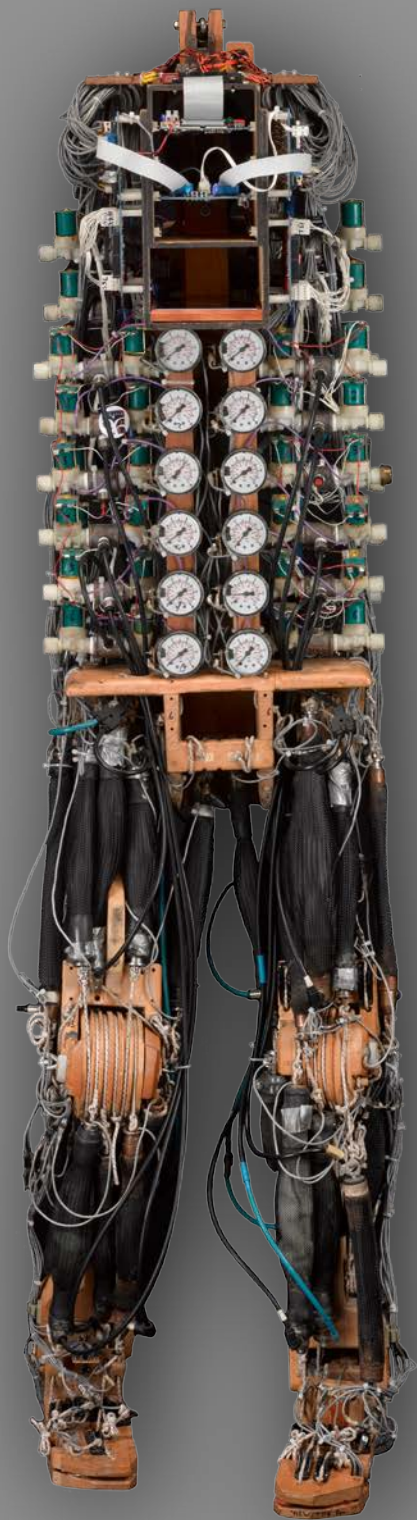
- Nao Evolution V5, 2015 – stands up and tells a story
- Baxter dual-arm collaborative robot, 2015 – picks up and sorts a collection of objects
- Kodomoroid from Miraikan, Japan, 2014 – reads out a news report while making hand gestures and looking at visitors





Imagine

To emphasise the feel of human/robot coexistence, each robot is displayed in a separate pen, with large projections in the corners of the space to place the robots in everyday scenes such as a park, workplace and café.



Learning objectives

Overall top-line message:

We humans have long re-created ourselves as machines. These forms mirror our technological ambitions, our sense of wonder at ourselves and our changing position in the world.

Overarching themes:

- Robots are things of showmanship and theatre that have the power to strike us dumb with fear or wonder.
- We have long used mechanised human forms to understand the complexity of our minds and bodies.
- Investment in robots reflects what society values and the places where those values were expressed.
- People's interpretations of mechanical humans differ throughout history, depending on their understanding of themselves in the context of their society.

What the hire fee includes

- Licence to display the exhibition
- Set structure including display cases, backdrops and props
- Audiovisual displays and hardware
- Working robots
- Objects from the Science Museum collections and external lenders
- Exhibition toolkits
- Touring Exhibitions Coordinator to manage the installation and deinstallation process
- Specialist Science Museum conservator/courier to undertake object handling, installation and deinstallation
- Specialist AV technician to provide remote support to the exhibition to maintain the working robots, train local staff and troubleshoot any technical problems

Suitable for venues able to provide

- Indoor display space of c. 750 m²
- Transport
- Insurance
- Staff and equipment to assist with approximate 21-day installation and 14-day deinstallation, depending on venue support facilities
- Storage for transport crates
- Object preparation space during installation and deinstallation
- Gallery staff during operating hours
- Translation and production of graphics with text if not displaying in English
- Translation and production of subtitles for digital and video components if not displaying in English
- Production of promotional and press material

Target audience

The exhibition is aimed at engaging audiences of independent adults and families with children aged 8+.



ROBOTS

Contact

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