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et industrie



# industrial evolutions

exhibition

14 june 2022

— 5 march 2023



The "Industrial Revolution" – generally accepted as a historical truth, has become part of our everyday language and refers to the idea that there was an abrupt change in production methods. It has played a key role in constructing a collective narrative that begins with the "invention" of the steam engine by James Watt in Great Britain in 1769.

When we take a closer look, we can see that industrialisation is a slow phenomenon that began well before the 18th century and is not tied to any particular region. It has very little to do with a revolution... rather it's all about "industrial evolutions". This is what the exhibition at the Cité des Sciences et de l'Industrie aims to show, focusing as much on permanence as on change.

For centuries, industry has been transforming raw materials on a large scale through work and energy, and organising the mass production of objects, networks, systems and services. We are intimately connected to the products of industry: they surround us, extend us, contain us, and we even ingest them. Nothing can escape their influence, since industry shapes human labour, but also landscapes, cities and our societies. A world in itself.

The exhibition explores this with an original reflection on the process of industrialisation, viewed through the lens of our relationship with technical objects, work and discourse. The time has come to deconstruct a myth.

**Bruno Maquart,**  
Chairman and CEO of Universcience

In partnership with  
the **École des Hautes Études  
en Sciences Sociales (EHESS)**  
and with the support of the  
**Union des Industries et Métiers  
de la Métallurgie (UIMM).**

Trilingual exhibition  
(French, English, Spanish)  
Age 14 and above

From 14 June, the Cité des Sciences et de l'Industrie presents *Industrial Evolutions*, a temporary exhibition that explores the "new industrial world" and its impact on mankind.

*Industrial Evolutions* reflects on the process of industrialisation, a vast and complex subject, spanning the past, present and future and touching on all areas of human activity, which are now more interdependent than ever. The artistic and educational installations give visitors a contemplative experience that allows them to understand the changes occurring today by comparing them with those of yesterday. They are then invited to question the duality of an industry that helps people live better but at the same time causes concern.

*Industrial Evolutions* is part of the "Societyscience / The way our world is changing" editorial line.

This thematic line features exhibitions dealing with changes in science and technology and their impact on our individual and collective lives. They therefore offer a valuable insight into social sciences and other major issues affecting society.

CONTENTS

The exhibition experience	p. 4
To accompany the exhibition	p. 12
Project team	p. 14
Partners	p. 15



# A GLOBAL, TRANSHISTORICAL APPROACH THROUGH 7 HIGHLIGHTS



## 1

### FROM FOG TO CLOUD

**Images projected on five large screens** set the scene and situate us in time.

From London's historic pea-soupers – a mixture of fog and coal smoke – to a digital cloud represented against a blue sky, the contrast is striking. Both these images share the same metaphor though. Whether against a black or a blue background, it is just as difficult to see clearly, as the changes etched on the face of industry are so profound and have affected all areas of human activity. Five themed slide shows (transformed landscapes, standardisation and accumulation, industrial locations, images of workers and networks), accompanied by an original soundtrack from *Cirque Électrique*, show us the complexity of today's industrial world and the lack of clarity that surrounds situations of great change.



## 2

### TRANSFORMATIONS

**Two installations** then reveal the increase in production and consumption and the changing face of industry:

- **AN AUGMENTED APARTMENT\*** demonstrates the enormous scale of the production lines and the complexity of the technical sectors behind everyday objects.

\* *Design : Tetsuo /nObraïn, set decor: Atelier Veroliv.*

- **A LENTICULAR INSTALLATION** entrusted to the artist Thierry Verbeeck shows the transformations over a century of a major site in French industrial history, PSA-Sochaux.

While manufacturing employment is declining in Europe and the United States, it is increasing worldwide and now employs 310 million people. Industry is not declining – it is thriving, moving and constantly evolving, feeding an economy based on the accumulation of objects. Today, our planet is being hyper-industrialised.





Tote those empties?

Or toss 'em away?

Why make hard work out of enjoying soft drinks? Every delicious flavor now comes in throwaway steel cans. No deposits, no returns. And soft drinks in steel cans taste so darn good!

BETHLEHEM STEEL

BETHLEHEM STEEL



## 3 THE AGE OF OBJECTS

Seven themes, represented by seven symbolic objects, are presented in 3 x 3 metre rooms that form the backbone of the exhibition. Each of these scenes includes a radio play complemented by other media (audiovisuals, graphics, tangible objects, sets and staging). The presence of these technical objects reminds us that their production is both the purpose and reason for the existence of industry. **We transform the world by making objects, which in turn transform us.**

Themes and objects presented:

- **ENERGY:** the myth of energy transitions / James Watt's condenser engine
- **OBSOLESCENCE:** from disposability as a way of life to programmed obsolescence / the rotor of the L'Increvable washing machine
- **INTERNET OF THINGS:** digitisation of the physical world / the smartphone and integrated circuits
- **CANNING:** food preservation as a factor in improving living conditions and human longevity / the tin can
- **SURVEILLANCE:** links between civil and military industry / the drone
- **BIRTHS:** gender, demography and industry / the contraceptive pill
- **IMPORT-EXPORT:** textile industry, colonialism and fast-fashion / Barbie dolls

Energy transitions, gender issues, the digitisation of the physical world, the political dimension of our technological choices and the duality of industry (which allows us to live better as much as it threatens us), colonialism and environmental impacts are all addressed here.

*The radio plays, with their offbeat and incisive tone, were written by author Luigi Cerri (Canopée).*



## 4 HOMO FABER

This highlight reveals the transformations in the organisation of work and the metamorphosis of industry through the question of work, while demonstrating the coexistence and proliferation of production methods.

**Three representative locations** provide structure for the subject:

- **THE MINE:** the extraction of minerals is the basis of industrial activity.
- **THE FACTORY:** as a symbol of the way in which people organise themselves around the production of objects.
- **THE DIGITAL PLATFORM,** which demonstrates the transfiguration of work through digital technology.

This highlight presents:

- a display of work clothes, illustrating in particular the merger of the manufacturing industry with the service industry;
- five audio testimonies of industrial operators talking about different modern-day jobs;
- a large-scale audiovisual installation (Testuo/nObrian) based on three arthouse documentaries: *The Coal Miner's Day*, directed and produced by Gaël Mocaër (Ukraine, 2013), *C'est quoi ce travail?* by Luc Joulé and Sébastien Jousse, produced by Shellac Sud, Travail et Culture (France, 2015), *The Republic's Couriers* by Badredine Haouari, produced by Les Ateliers Varan (France, 2018).



# 5 GRAND NARRATIVES

What if Karl Marx talked to Steve Jobs?  
And Elon Musk to René Descartes?

**A humorous film**, written by Luigi Cerri using genuine quotes, stages a debate between historical figures whose ideas and speeches have marked the history of industrial activity. These narratives correspond to two recurring visions, depending on the teller: technology and industrialisation are either perceived as threats to mankind or as solutions to all our problems, as sources of subjugation or emancipation.

*Film directed by Résonance Films.*



dessiné par C. Jacquard  
RENÉ DESCARTES.  
Gravé par A. Baudouin



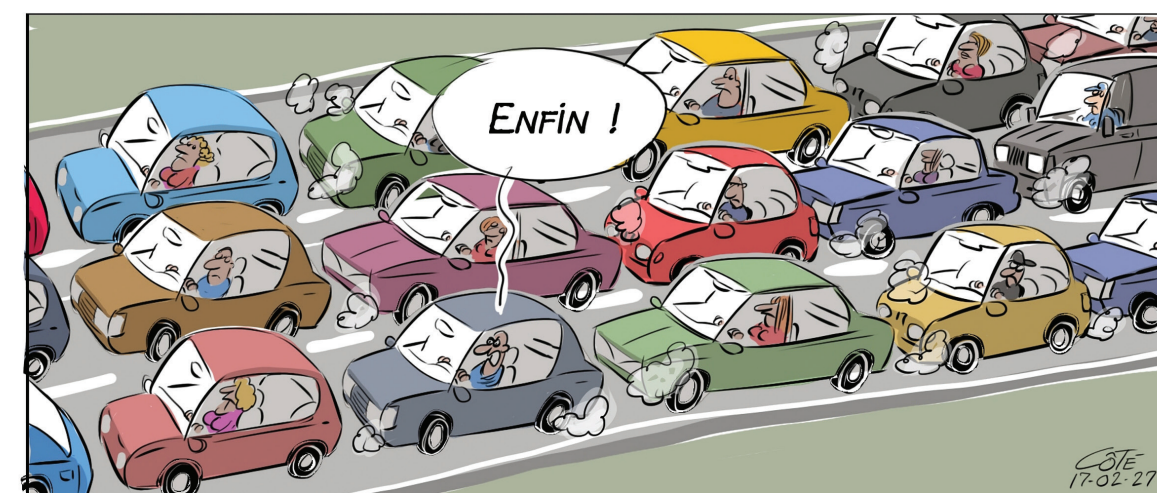
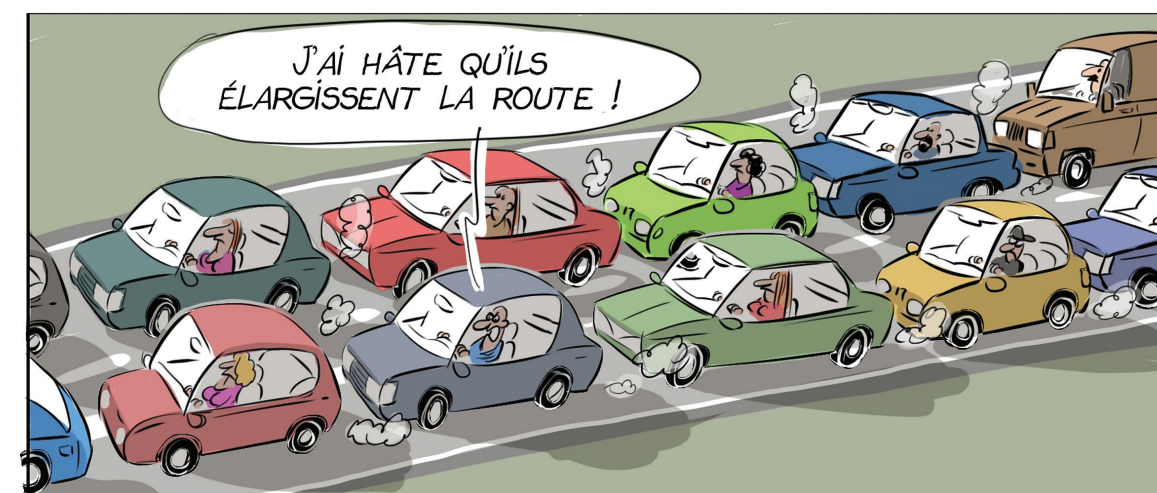
# 6 THE REBOUND EFFECT (JEVONS PARADOX)

This phenomenon, known as the rebound effect, has been observed for a long time and has never been refuted, but it remains little known to the general public and is often «forgotten» when it comes to both individual decisions and political choices. It can be summed up like this: an innovation that is aimed at a more efficient use of energy or resources leads, in turn, to an increase in the consumption of this resource and energy.

The installation on display is a literal, physical, monumental and contemplative expression of this rebound effect. It was designed and produced by digital craft collective Les Arts Codés (Sonia Laugier and François Brument).

## WHAT IS THE JEVONS PARADOX?

In the middle of the 19th century, English coal producers became concerned. As steam engines became more efficient, they were using less and less of their precious fuel. Would there still be enough demand for coal? The English economist Jevons reassured them: because machines are more efficient, production will increase (cotton, cast iron, etc.), prices will fall and, in the end, coal will be used more and more. And that's just what happened. Each machine uses fewer resources, but total consumption increases – it rebounds. This pattern is at the heart of industrial growth and is repeated systematically for all innovations.





# 7 AUGMENTED EARTH / DIMINISHED EARTH

The exhibition ends by lifting the curtain on the new hyperindustrialised world. This highlight presents the gigantic, invisible infrastructures of digital technology: satellites, undersea cables and data centres. A spectacular 270° video projection reveals these new infrastructures and shows how the Earth has become a ball of cables supporting almost instantaneous communication, surrounded by satellites through which everything is geolocated, where data is stored in increasing numbers of data centres whose existence we barely even notice. Our Earth, diminished in terms of resources, is at the same time augmented by a digital continent that we have not yet mapped. Hidden from view by their sheer size, concealed by the vocabulary used to describe them (network, cloud, dematerialisation), digital infrastructures nevertheless occupy a physical reality within our global industrial machine that is unprecedented in human history.

This installation, designed by Ilusio and crisscross.studio, is completed by an original composition by Cirque Electrique.





# PUBLICATIONS

BOOK



## HEROES OF THE CLOTH

**The fabulous history of textiles**

Written by Séverine Laliberté and Audrey Millet, illustrated by Nicola Gobbi.

Imagine a textile trade fair that crosses space and time: Karl Lagerfeld, Michael Jordan, Colbert, Otzi, an influencer, Adam Smith, an Indian textile worker, King Arthur... Guided by Pétronille, an archaeologist, and Audrey, a fashion historian, the reader is plunged into a story that is also the history of humanity, from the Palaeolithic to fast fashion.

The industrialisation of the world was a long-term process, shaped by inequalities, access to natural resources, social and political struggles. No other field is more representative of this than textiles. This book gives the anonymous the place they deserve in the history of textiles and puts its evolution into perspective.

New joint publication Steinkis / Cité des Sciences et de l'Industrie. Available from bookshops and online from 9 June 2022. Format 190 x 250 mm / 144 pages / €19.



## INDUSTRIAL EVOLUTIONS EXHIBITION JOURNAL

Author of texts and interviews: Olivier Quezada.

Interviews with Liliane Hilaire-Pérez, professor of modern history at the Université Paris-Cité and director of studies at the École des Hautes Études en Sciences Sociales (EHESS), Thierry Weil, doctor of physics, professor at Mines Paris, Pierre Veltz, sociologist and economist, and Astrid Fontaine, exhibition curator and museographer.

Designed as a souvenir of the exhibition, this journal deconstructs the notion of the "industrial revolution" that appeared with James Watt's steam engine, in favour of a series of progressive evolutions. Three scientific experts question the collective narrative of the "Industrial Revolution" in a concise way by focusing on a series of emblematic characters and places.

Available from 10 June 2022. On sale only at the Cité des Sciences et de l'Industrie and on cite-sciences.fr Format 21.5 X 42 cm / 24 pages / €5.95.

## ONLINE GAME: LE PARADOXE

"Le Paradoxe" is an interactive digital game that gives you a better understanding of the rebound effect, also known as the Jevons paradox. The player takes on the role of the new mayor of a small village where a threatening cloud is growing in the sky. This cloud, which the worried inhabitants call the Paradox, puts the holding of their beloved Chestnut Festival at risk!

Age 15 and over. Purchase from the online ticket office of the Cité des Sciences et de l'Industrie. More information to come.

DATE FOR YOUR DIARY

**"Industry Tomorrow" event week**  
from 15 to 20 November 2022.  
More information to come.



EXHIBITION BOARD

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**Pierre Veltz**, engineer, sociologist and economist. Professor emeritus at the École des Ponts ParisTech, member of the French Academy of Technologies. Former president of the Paris-Saclay public planning authority  
**Thierry Weil**, doctor of physics, engineering graduate of the Corp des Mines, member of the French Academy of Technologies, professor at Mines ParisTech (Centre for Industrial Economics) and former delegate of the Fabrique de l'Industrie. Futures of Industry and Work Chair (Cerna, I3, CNRS)

SCENOGRAPHY

Exhibition scenography workshop: **Pascal Payeur**, **Sylvie Jausserand**, **Samuel Mola**

ASSOCIATE ARTISTS

**Le Cirque Électrique**  
cirque-electrique.com  
**Les Arts Codés**  
lesartscodes.com  
**Luigi Cerri and la compagnie Canopée**  
compagniecanopee.com  
**Thierry Verbeeck**  
thierry-verbeeck.be

IN PARTNERSHIP WITH



The École des hautes études en sciences sociales (school of advanced studies in social sciences or EHESS), created in 1975, is one of the main centres for human and social sciences in Europe. It is unique in the French higher education and research landscape, both because of its interdisciplinary intellectual programme and because of its training-through-research model, its international roots and its openness to society. EHESS is playing a leading role in the revival of industrial history thanks to its interdisciplinary approach, which enables it to grasp the complexity of economic processes and the diversity of social and political issues linked to industry. In addition, EHESS, as host institution and co-organiser of the 19th World Economic History Congress, wishes to encourage the international influence of research and innovative achievements in economic and industrial history.

WITH THE SUPPORT OF



The Union des Industries et Métiers de la Métallurgie (Union of Metallurgy Industries or UIMM) is a professional organisation whose vocation is to support the companies in the sector at all stages of their development, to represent them and to promote their interests, whatever their size and sector of activity (metallurgy, metal processing, mechanics, automotive, shipbuilding, aeronautics, space, railways, nuclear, electrical and electronics). The UIMM represents 42,000 industrial companies, which employ 1.6 million people. It relies on a network of 59 territorial trade union chambers, including the GIM in Île-de-France, as well as 10 professional federations. It also runs the leading private association network offering technical and industrial training that is as close as possible to the skills needs of companies. The UIMM and the GIM have been committed for many years to promoting the industry and its trades. Together, they wanted to be partners associated with the Universcience exhibition in order to make the industry in all its dimensions known to young people, their teachers and their families, and more widely to the general public.

WITH THE PARTICIPATION OF







# #ExpoEvolutionsIndustrielles

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Concession: **€9** (over 65s, teachers, under 25s,  
large families and students).

**Free** for under 2s, job seekers and people on a low  
income, disabled persons and their carers



Entirely designed and produced by the Cité des Sciences et de l'Industrie, this exhibition  
has been configured to meet the health and hygiene requirements for Covid-19



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