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Press release
October 2022

CROWDS

Exhibition from 18 October 2022 to 6 August 2023 at the Cité des Sciences et de l'Industrie

> *« In a real world densely populated by humans or a virtual world full of social media avatars, our day-to-day lives increasingly involve crowds. Crowds that sometimes make good sense, with the development of participative initiatives on the Web. But when, on the contrary, it features all the vices of classic culture, as we might experience on public transport, at a match or during a public event, a crowd is likely to generate unease and anxiety raising certain questions. But what exactly happens when we find ourselves in a crowd? How can we explain this unique phenomenon that is much more than the mere sum of its components? Crowds is an exhibition that calls upon a wide array of scientific disciplines, ranging from physics to behavioural science, to analyse the multiple and complex mechanisms that come into play between individuals whenever a crowd is formed. It explores the profoundly social nature of human beings and invites us to reflect on the concept of individuality at a time when we increasingly face collective challenges. »*
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> **Bruno Maquart, Chairman and CEO of Universcience**

A crowd is a number of interacting individuals. Surrounded by people, we are carried by enthusiasm or jostled around in every direction. While it may be pleasant being surrounded by football supporters at a match, demonstrating citizens who share the same convictions, or marathon runners all thirsty to win, it can also be a frightening experience to be crammed into the metro, squashed in a procession or in the middle of a religious pilgrimage. All of these situations have a common factor: each individual exists only through their interaction with others. From these interaction emerge the collective phenomena that the Crowds exhibition aims to study through the lens of «Societyscience».

Density is the exhibition's underlying theme. The exhibition begins with an analysis of crowds, moving from compact crowds to sparse crowds ending with the study of the remote crowds of the digital world. The actual path of the exhibition is based on the crowd measurement unit that we call density or, quite simply, the number of people per square metre. Comprising a large number of interacting individuals, a high-density crowd is a group in which the laws of physics allow us to identify different types of components – humans animals, grains, particles and so on. When the density diminishes, we have to rely on behavioural sciences to explain the urban choreography and all types of collective movement. At the intersection between many sciences – fluid mechanics, granular physics, mathematics, cognitive science and social psychology – the study of crowds whether they are compact, dilated or remote, reveals the social nature of our species.

A modern vision of the crowd. In the popular imagination, crowds are frequently seen as something negative, like strange creatures that may even cause concern. Based on the most up-to-date interdisciplinary research, Crowds aims to deconstruct this longstanding negative image. Through an ingenious path design, the exhibition invites visitors to experience a more positive crowd immersion from within, or to better understand how crowds function by observing from the outside. Switching between player and observer, the visitor becomes a true "crowdologist"*.

Mehdi Moussaïd, a cognitive science researcher at the Max Planck Institute for Human Development (Berlin), is the exhibition's science curator.

- Trilingual exhibition (French, English, Spanish)
- From 10 years old
- In partnership with the Max Planck Institute for Human Development. With the support of Transilien SNCF.

Crowds 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.

© Soren Solkaer, *La beauté du collectif*

*The term crowdologist derives from the neologism crowdoscopy, of which the French equivalent, "fouloscopie" was invented by Marion Montaigne, author of the comic books Tu mourras moins bête (You will die less stupid).

THE EXHIBITION

■ Introduction: Samples of crowds

As the exhibition's underlying theme, density (number of people per m²) is one of the cornerstones of crowdoscopy – a factor that is key to understanding, questioning and analysing crowds. The public comes face to face with this theme upon the first display, entitled "Samples of crowds", created by artist Iommy Sanchez. Visitors find themselves confronted with five 1m² cabins into which are packed 1, 3, 5, 7 and up to 9 characters printed in 3D.
The sixth cabin is left empty so that visitors can enter, alone or in a group, to allow their senses to experience the concept of density.

■ Tightly packed crowds

It is in situations of very dense crowds that our freedom of movement is most restricted. Instability, disturbances, movement and turmoil can sometimes lead to a sense of insecurity. At this level of density, a crowd behaves like a fluid. On the wall, images of concerts, religious gatherings and sports meetings show how stampeding crowds move in waves. A parallel is drawn with a wave aquarium installed in front of this giant screen. Powerless individuals find themselves jostled by waves of compression. Just next door, in a physical experiment on collective movement on a totally different scale, visitors can witness how millions of moving polystyrene microbeads eventually line up spontaneously. Individuals, in a very dense crowd, act like grains that by rushing can block others. So what can be done to avoid the worst and get out calmly? By manipulating hourglasses the visitors find out a way of handling the situation and test in a simulation game the times of evacuation in a building and their consequences. In this same room, a film by researcher Mehdi Moussaïd relates a study conducted in his laboratory: in an emergency situation, in most cases the entire crowd heads for the same emergency exit, hence the need for wide corridors and the clearest possible signage.

Marathon au Parc Yeouido, Séoul, Corée du Sud
© Imazins / Image Bank Film /via Getty Images

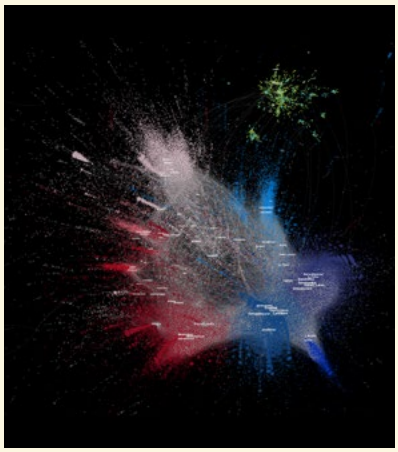
■ Pedestrian crowds

At stations, in underground trains or attending a concert, we are still in a crowd situation, but with a lower density. We shall call such situations "pedestrian crowds". So why is it so rare for pedestrians to bump into one another? This phenomenon is clearly obvious among animals, as the public can witness here in a hypnotic film by Søren Solkær which shows the unexpected coordination of an enormous flock of starlings. Collective behaviour can be seen among multiple species of wildlife. Which ones? Bees? Ants? This is one of the questions in a collective quiz entitled "Questions for sheep". Further along, a multimedia game, "The eye of the crowdologist", invites visitors to train their eyes to spot characteristic pedestrian behaviour. Without knowing it, we almost systematically adopt such behaviour for the benefit of the fluidity of movement. In the same room, a unique film of moving footsteps is projected onto the floor, inviting visitors to join this peculiar dance floor to discover the hidden rules that govern how we approach - or move away from - one another.

Carrefour japonais de Shibuya © DR

■ Digital crowds

This same collective behaviour comes into play when we communicate by word of mouth or on social media. The third part of the exhibition studies the concept of the remote and less dense "digital crowd". By projecting on the wall a data visualisation tool named "The politoscope", researcher David Chavalarias demonstrates that interactions between Twitter users are based on affinities and can therefore heavily polarise a debate.
This is because even in a distanced relationship we form networks, or "little worlds". This particularly effective communication architecture is explained in a short video. A little further on, a set of display cases features plastic installations offering a quirky illustration of hearsay in about a dozen examples, old and new, of famous and lesser-known rumours. The visitor learns that rumours, conducive to group cohesion, already existed long before the emergence of social media. And why is it that, when we sing together, it feels as if we're vibrating in unison? Or singing in tune? A karaoke session analyses this scientific phenomenon and invites the public to sing out loud. Choirs are a perfect example of collective adjustment; we align spontaneously, matching our behaviour to that of our neighbours to achieve a certain harmony!



© CNRS/ISC-PIF/MULTIVAC DAVID CHAVALARIAS

■ Between crowds and groups

When does a crowd become a group? What is the difference? The murals in this gallery portray the concepts of influence, a feeling of belonging, and tipping points – the exact moment when a crowd, transported by a common cause, becomes a political movement, a social welfare campaign or some other group.

■ Bad reputation

While it is true that collective movements can lead to the worst of scenarios, they can also generate a sense of solidarity and a form of collective intelligence. This is demonstrated in La Mauvaise Reputation (Bad Reputation), a film that offers a mixed approach: historical, sociological, political, psychological and anthropological. Fluctuating between jubilation and violence, mass crime and solidarity events, this final part of the exhibition aims to shatter misconceptions about crowds, historically perceived as dangerous and uncontrollable. It also offers an opportunity to study the notion of crowd panic.

■ Through the looking-glass

Visitors can even spend a moment in the shoes of a “crowdologist”!
That is what this secret room is for, and it has a few surprises in store!

Around the exhibition

■ Exhibition journal

Designed as an extension to the tour, this journal highlights the multidisciplinary approach of researchers who study crowds and reports on how their results are currently put into practice. By studying the concepts of collective intelligence and digital crowds, it also provides some keys to understanding the character of crowds today.

Author of texts and interviews: Clara Delpas, science journalist.
Scientists interviewed: Mehdi Moussaïd, the exhibition’s scientific curator, a cognitive science researcher from the Max-Planck Institute for Human Development (Berlin), and author of a book entitled Fouloscopie (Crowdoscopy) and Audrey Dussutour, a member of the exhibition’s scientific committee, an ethologist and research director at the animal cognition research centre of the CNRS (Toulouse).

Available at the Museum shop, at the cash desks and on line form 18 October 2022. €5.95.

■ **Card game** Cartzzle Foules

“Cartzzle Foules” is a puzzle comprising 55 cards which can be overlaid. The aim is to reconstruct two pictures, one of a human crowd, the other an animal crowd, and to meet a number of challenges that involve creating new puzzles. This requires attention to detail, good observation skills and great care!

Ages 8 and up. A joint publication by Jeux Opla / Cité des Sciences et de l’Industrie.
Available from October 2022. On sale at the Cité des Sciences, at toy shops and in our online shop. Retail price: €11.

■ **Online escape game** Trapped in the crowd

Professor Solo has locked the players in his laboratory and their avatars are being held in his crowd simulator! In this collaborative online escape game, the countdown takes the form of a crowd of increasing density. To escape, players must work together to pass a succession of tests. They experiment with the collective intelligence mechanisms that are behind complex systems such as a shoal of fish or a colony of ants. How will the team get organised? Crowds can cause anxiety but they can also be a fabulous source of innovation. Beware, your time is limited!

Ages 11 and up. Duration 45 to 90 minutes. For 2 to 6 players. Available from October 2022.

■ **Demonstration** Does a crowd speak with one voice?

A crowd can take decisions in a number of ways. There are numerous voting systems and methods with varying impacts on the results. Find out how the final result is affected by the voting method.

From 22 October 2022. Duration 45 minutes.

Useful information

Cité des sciences et de l’industrie

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Opening times
Open daily except Mondays,
from 10am to 6pm,
and until 7pm on Sundays.
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#ExpoFoules

Admission
→ 12 €, 9 € (reduced rate for the under 25s, students, over 65s, teachers and large families)

→ Free for children under 2 years of age, job seekers and people on a low income, disabled persons and their carers. The admission ticket is valid for the exhibitions on levels 1 and 2, the Argonaute and the planetarium.

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