



THE LONDON SCHOOL  
OF ECONOMICS AND  
POLITICAL SCIENCE ■

10-15 JUNE

**LSE FESTIVAL 2024**  
**POWER AND POLITICS**

# DISPLAYS OF POWER

HOW CAN WE VISUALISE DIFFERENT FORMS  
OF POWER AND THEIR IMPACT ON POLITICS?

Bringing together research from across the social sciences, the exhibition explores the people and institutions, technologies, infrastructure and other phenomena that shape our world.

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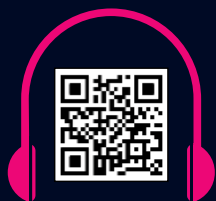


OR SCAN THE QR CODES TO LISTEN  
TO OUR AUDIO COMMENTARY



Kashushu: "A Bright Future"

# IN SEARCH OF SPIDER CONSCIOUSNESS



SCAN TO HEAR MORE FROM  
**DARIA** ABOUT HER RESEARCH

We can easily forget that we are only a tiny part of a vast sentient world full of other conscious beings with lives of their own to lead.

Even those of us far away from centres of political power have immense influence over huge numbers of animal lives. **Daria Zakharova** invites us to consider the weight of our influence, especially on those beings far removed from our everyday considerations: the invertebrates.



## INSTALLATION

Daria and an interdisciplinary team created an art installation “In search of spider consciousness” for Nowhere Festival in 2023, which invited people to enter the head of a giant Portia jumping spider to discover an artistic meditation on the mind of an arthropod. Visitors would enter the giant spider sculpture and be immersed in the spider’s point of view on the world, as represented obliquely through the medium of light, sculpture and original music, inspired by scientific evidence.



## VIRTUAL REALITY EXPERIENCE

A 3D capture recreates virtually the experience of the original sculpture, which was 3.5 by 12m<sup>2</sup>. As in the original, the installation invites the viewer into an immersive walk inside of the spider’s head and into the spider’s mind. The artistic interpretation of the imagined subjective states of the arachnid mind is presented through an original music piece paired in a beautiful choreography with light patterns in the two main eyes of the spider. This immersive encounter invites reflection on the complexity of consciousness that thrives in even the smallest of beings, urging us to reconsider the boundaries of our moral and ethical responsibilities towards them.



## PORTIA'S EYES

Portia (a genus of jumping spider) has excellent vision, unique among spiders. With its two large primary eyes it can see detail almost as well as a human eye. Its field of vision however is extremely narrow, akin to looking through a looking glass. Therefore, Portia has to move the tubes of its primary eyes around in complex patterns to see anything, be it prey or just to “complete” a picture of its surroundings. We believe that any type of cognition and potential sentence present in Portia would be intricately connected to the mode of functioning of its perceptual system.

## ARTISTIC TEAM

- Daria Zakharova** Creative lead
- Ivan Isakov** VR, engineering
- Paulo Ricca** Lights, creative coding
- Andrey Novikov** Original music
- Stephen Allwright** Build
- Lucy Onischenko** Design, logistics
- Michael Haber** Build, logistics
- Maribeth Rauh** Design, logistics

## COLLABORATORS

- Luke Hollis** 3D capture
- Sean Toole** Photography

## SUPPORTERS

Professor Jonathan Birch and the ASENT team  
Department of Philosophy, Logic and Scientific Method at LSE





# CONTESTED FLOWS:

## THE UNCERTAINTY AND SCARCITY OF WATER IN JORDAN



SCAN TO HEAR MORE FROM  
FRED ABOUT HIS RESEARCH

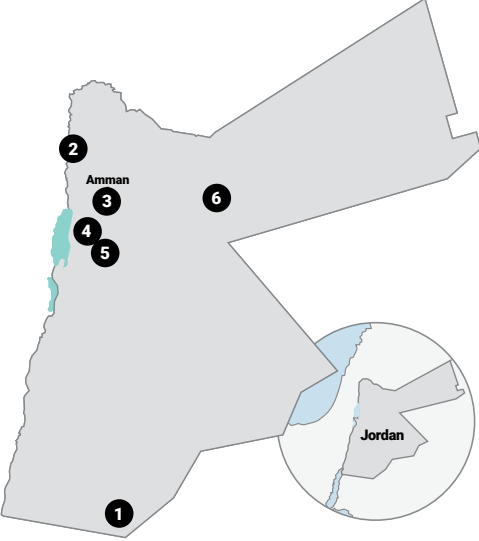
Jordan is increasingly defined by water scarcity: its status as one of the most water-poor nations on earth is repeated frequently in both the country's own economic and climate change strategy documents, and in the reports of international donors.

Yet this idea of absolute scarcity obscures the ways water flows are shaped by social practices and by power, making experiences of water scarcity extremely uneven.

Dr Fred Wojnarowski uses ethnographic research with water users, officials and people already experiencing water scarcity to challenge technical, apolitical understandings of the water system, and to show how any solutions must be social and political.

This display represents Jordan's water system not as a technical system for the movement and management of a natural resource, but as a social and economic metabolism, in which many people and places are brought into relationships with each other at different scales by the contested flows of water.

Water here speaks to wider flows of power, revealing issues of equity and distribution. Through a series of case studies the display looks at the water system, as it is generally understood, and asks some questions about what within this picture is unknown, open to question and contentious.



### WHERE DOES THE WATER COME FROM?

1



Cost  
\$1.1bn

4 years  
to construct

#### Disi Conveyance Project wells, Mudawara, Southern Jordan

Jordan's largest megaproject, built with foreign investment, pumps groundwater up to the surface from a deep aquifer.

**When will the water run out?** This is fossil water – once it's gone, it's gone forever. Jordan's official water strategy estimates <30 years remain, but others suggest within a decade the water may be too saline to use.

**Is the water safe?** Containing radioactive radium isotopes, the water must be blended with equal quantities of water from other sources to be safe to drink.

2



#### King Abdullah Canal, Jordan Valley

Jordan's main surface water resource, where its most intensive agriculture is concentrated.

The water in this sub-tropical valley, 500m below sea level, is some of the most disputed on earth. Israel takes a fixed (rather than relative) amount under their peace treaty, disadvantaging Jordan. Plans for a 'blue-green' deal, to swap solar energy from Jordan's deserts for Israeli water, have been made politically impossible by the Israeli war on Gaza.

Of Jordan's share, most is pumped to the capital, leaving local farmers struggling to meet their needs.

Jordan is forced to purchase  
**10 million m³**  
of additional water  
each year from  
Israel

100 million cubic metres extracted annually  
Through 55 wells  
Amman 330km  
Pumped to the capital, Amman  
Half used for agriculture locally, through Water User Associations  
Half (110 million m³) pumped to the highlands and used to dilute Disi water

### HOW DO PEOPLE ACCESS WATER? WHAT ARE THE IMPACTS OF WATER SCARCITY?

4



#### Wala River, Dhiban

The Wala River used to feed wells, springs, crops and flocks in this rural district, an hour south of the capital, but it has slowly reduced to a trickle, finally dammed in 2006. Dam water is mainly used for domestic supply in Amman, with insufficient amounts for local farmers. Locals say it has become badly polluted by mismanagement, further damaging their crops.



Dhiban has experienced waves of protests in recent decades, with water a key issue. People see the way their water is appropriated and polluted as a concrete example of widespread corruption and the political and economic exclusion of their community.

**How is the water becoming so polluted?**

3



#### Amman – Miyahuna "Our Water" company

The water from these sources supplies the capital and central part of the country, distributed by a state-owned water company. Households who can afford a connection get a weekly timed slot of piped water, otherwise relying on storage tanks.



Cost to connect to water system  
500JOD (£572)

More than the average monthly salary in Jordan

Richer households have large tanks and can buy in more water by tanker, enabling weekly car-washing, lavish lawns and swimming pools. For poorer households, the day the water comes is the day when (mostly) women try to do all the water-intensive housework.

Water mains system built in the 1980s  
Piped water available: 6 hours per week  
40–50% of the water goes missing  
Water access ranges from 1–48 hours per week  
43 distribution zones receive mains water

5



#### Jabal Bani Hamida

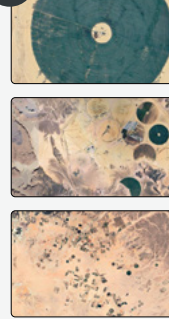
This deprived mountainous region, inhabited by former semi-nomadic Bedouin, is one of the most water-poor in Jordan. As ancient stone wells dry up and turn saline due to overexploitation elsewhere, locals face the agonising choice between losing their plants and animals or paying exorbitant fees to private water tanker companies.

Most youngsters move away for work and only the pensioners and very poorest remain. Those who stay rely on mains connections to Miyahuna, paying similar bills but receiving far less water than urban areas. One old woman summed up her situation as "next to the well, and you die of thirst".



**Is there any sustainable future for small-scale highland agriculture?**

6a



### WHERE IS THE WATER GOING?

#### Azraq and the eastern desert

As Amman expands, agriculture and urban sprawl are pushed eastwards into the desert, requiring ever more groundwater wells. These wells often feed central pivot sprinklers to grow high-intensity crops, such as salad crops, bananas and citrus, in part driven by a requirement for empty land to be irrigated before it can be registered in Jordanian law.

While such irrigation is not an economically efficient use of a scarce resource, it provides jobs in areas with few other opportunities, and to restrict it could cause unrest.

Agricultural sector  
= 4% of GDP but  
30% of jobs

Water used in agriculture = lowest economic contribution per unit

Piped water available: 1.5 hours a week (often coming at midnight)  
Connected to water grids (as well as electricity, roads and wider government services) in the 1990s  
20m  
Water table sinking at 20m a year in places as a result of groundwater wells

### SHARE OF WATER USE

(source: Jordanian Ministry of Water, National Water Strategy 2023-2040)



47.5% municipal (domestic potable water)



49% agriculture



3.3% industrial

### WHAT IS WATER SCARCITY?

United Nations' definition  
below 500 metres³ per person annually

Available water in Jordan today  
61 metres³ per person annually

Available water in Jordan by 2040  
expected to be 35 metres³ per person annually

6b

### WHERE IS THE WATER GOING?

Despite government attempts to limit well-building, many landowners have sunk illegal wells, often shielded from prosecution by powerful political contacts. Digging these illegal wells is an expensive and serious undertaking, needing drill rigs and geological expertise. Satellite imagery shows much more irrigated land than can be accounted for by legal sources, and this overexploitation is causing the water table to sink.

Water from illegal wells is also sold by landowners to private tankers, where it enters a shadow water economy.

**What is the extent and impact of this shadow economy of water?**

Cost of well-sinking  
**£57k**  
per well

# THE POLITICS OF CONVERSATION

## HOW POWER PLAYS OUT IN CONVERSATION

To understand our core political institutions and the power dynamics that sustain, challenge, and transform them, we need to understand the conversations that are foundational to them. Through conversation, different actors – from politicians, to journalists, to ordinary citizens – participate, collaborate, intervene, exclude, silence, and hold each other to account.

Conversation analysis allows us to identify and describe how power is displayed and wielded – second by second, breath by breath, gesture by gesture – through communication practices such as silence, laughter, hesitation, and interruption.

**Professor Elizabeth Stokoe** tells the story of classic and (in)famous political conversations. These conversations show how people, from news interviewers to ordinary citizens, hold politicians to account – and sometimes get caught out in political encounters themselves.

### WATCH THE VIDEO

Reid/Johnson (2022)  
Gould/Thatcher (1983)  
Paxman/Howard (1997)  
Humphrys/Sopel (2018)  
Stayt/Gaga (2016)

## COMMUNICATION WITHOUT WORDS

Many of these conversations show the power of communication with resources other than words. These are “paralinguistic” and “embodied” resources like pitch, volume, intonation, pace, facial expression, gesture, and body position.

In **Gould/Thatcher**, Margaret Thatcher smiles when she forgets Diana Gould’s name, while Gould rolls her eyes in response to Thatcher’s assertion of power and status. In **Stayt/Gaga**, Charlie Stayt fills Lady Gaga’s “silence” with smiles and gestures to pursue a response, none of which she reciprocates.



## THE SPECIFICS OF WAFFLE

As Prime Minister, Boris Johnson was regularly accused of “waffling”. We think we know “waffling” when we see it, but what actually comprises it? In **Reid/Johnson**, Johnson’s long, unfocused turns are littered with repetition, hesitation, incomplete words, and false starts. Waffling makes Johnson’s inadvertent admission (“No?”) an almost inevitable consequence.



## THE POWER OF SILENCE

**Stayt/Gaga** shows how powerful – and uncomfortable – silence in conversation can be. But what is silence, especially in face-to-face interaction? Lady Gaga does not respond verbally to Charlie Stayt’s question, creating a long and painful “silence”. But silence is not absence: Gaga uses gaze and loud breaths to maintain it.

Conversely, imagine how **Humphrys/Sopel** would have unfolded if Jon Sopel had been silent instead of laughing.



## THE REALITY BEHIND THE HEADLINES

The BBC Newsnight interview between **Paxman/Howard** became known as “the night of 12 times” as the media reported a dozen instances of Jeremy Paxman asking Michael Howard the same question.

But conversation analysis shows that Paxman actually asks three different types of question, and none of them 12 times.

## TECHNICAL TRANSCRIPT: SUSANNA REID AND BORIS JOHNSON

In May 2022, broadcaster Susanna Reid interviewed then Prime Minister, Boris Johnson, on ITV’s Good Morning Britain about the cost-of-living crisis. His response was widely seen as evidence of his lack of empathy for people like Elsie, the struggling pensioner discussed in the interview.

55 BJ: An’ the- the- the best ↓answer (0.4) is t- (0.2) help her: b- with-  
56 aba:te the cost of energy (0.4) as we are, .hh but also [t- t- t’make  
57 SR: [Wh’t through a  
58 loan that she has to pay back,=  
59 BJ: =t’make sure, (0.5) w- there’s a- there’s a: direct (0.3) #uh# cut  
60 in her council tax as a result of what we’re doing, .hh uh plus the:  
61 [uh the warm home- plus the warm (her) homes allowance h plus the]=  
62 SR: =[She doesn’t qualify for the council tax rebate as her home comes ]=  
63 BJ: =[.winter fuel allowance there are-]  
64 SR: [under Band F. ]  
65 BJ: >>There are measures that we put place t’help peopl- .hh <<But I’m NOT  
66 [gonna pretend t’you .hh Susanna I’m not gonna pretend t’- ] t- se==  
67 SR: [Prime Minister: you can’t say anything t’help Elsie can you.]  
68 BJ: =No?

Marked downwards shift in pitch  
Pauses within turns timed to the nearest tenth of a second  
Square brackets indicate the onset and end of overlapping talk  
“Equals signs” are placed between turns that occur less than a tenth of a second apart  
Hash sign indicates creaky voice  
Colon indicates prolonged vowel or consonant  
In- and out-breaths are indicated by hhh, with and without a full stop. The more h, the longer the in- (hhh) or out-breath (hhh)  
Words or syllables in upper case are louder than the surrounding speech from the same speaker  
A dash indicates a cut-off or incomplete word, often followed by a reset or restart  
Carats enclose speech that is faster (>) or slower (<) than surrounding speech by the same speaker



“YOU CAN’T SAY ANYTHING TO HELP ELSIE CAN YOU”

SCAN TO HEAR MORE FROM ELIZABETH ABOUT HER RESEARCH



SCAN FOR A GLOSSARY OF SYMBOLS







# WHY DO ELECTIONS MATTER?

Professor Michael Bruter and Dr Sarah Harrison founded the Electoral Psychology Observatory (EPO) to put citizens at the heart of how we study elections, arguing that, when it comes to democracy, the experience of the people voting matters as much as the outcomes of elections. A better functioning democracy must have the experience of citizens at its heart.

Part of their research has involved observing elections all over the world, and these photographs and quotes from voters help to tell a story about people's experience of Election Day.



## There's no such thing as a polling station

No piece of architecture is ever designed to be a polling station. Instead, buildings used for a whole variety of purposes (schools, churches, supermarkets, garages, even laundromats) temporarily become hosts to polling stations once every few years. Yet they are often the primary location where citizens interact with their democracies and their design matters. What should an ideal polling station look like?



SCAN TO HEAR MORE FROM  
MICHAEL AND SARAH  
ABOUT THEIR RESEARCH



"I WAS WONDERING WHO OTHERS WERE VOTING FOR."



"I HAVE GREAT PLEASURE SLIDING THE BALLOT INSIDE THE ENVELOPE."



20-30%

OF VOTERS TYPICALLY EITHER MAKE UP OR CHANGE THEIR MINDS DURING THE WEEK OF AN ELECTION, HALF OF THEM ON ELECTION DAY ITSELF.



"POLITICS ARE SO MUCH A PART OF HOW I INTERACT WITH PEOPLE. THESE ISSUES ARE PERSONAL. I DON'T UNDERSTAND HOW PEOPLE SEPARATE POLITICS FROM RELATIONSHIPS."



## The impact of queues

Election Management Bodies worldwide worry about queues, fearing they will put voters off and generate dissatisfaction. But the evidence gathered by the EPO suggests that whilst excessively long queues generate complaints, moderate queues inspire excitement and the feeling of being part of an important collective event. They are subconsciously seen as a sign of democratic momentum and shared experience.

"WHY AM I WASTING MY TIME WITH THIS, WHEN I COULD BE SPENDING IT WITH MY FAMILY OR PLAYING GAMES OR EVEN COUNTING MY TOES?"



1.5x longer

VOTERS SPEND ROUGHLY ONE AND A HALF TIMES LONGER THINKING ABOUT THEIR ELECTORAL CHOICE WITH A PAPER AS COMPARED TO AN ELECTRONIC BALLOT.

"A SENSE OF HISTORY LINKING ME WITH GENERATIONS OF WOMEN VOTERS AND THE HARD WON RIGHT TO VOTE."



"GREAT TO SEE OTHER PEOPLE THAT WERE REALLY ENTHUSIASTIC AND EAGER TO VOTE."



"I FELT A GREAT MOMENT OF EMOTION."



## How we vote

Going to vote alone has a very different symbolic meaning from going as a family, bringing children along, or making it a collective social outing with friends or neighbours.



# WHO has POWER over our VISIONS of the FUTURE?

OVER THE PAST TWO DECADES, OUR PERSPECTIVE OF WHAT LIES AHEAD OF US HAS BEEN RADICALLY SHAPED BY SILICON VALLEY. RESEARCH BY ASHER KESSLER EXPLORES HOW ONE COMPANY, FACEBOOK/META, HAS ENVISIONED THE FUTURE IN DIFFERENT WAYS OVER THE LAST 20 YEARS. HOW DO THESE FUTURES REORIENT OUR SENSE OF THE PRESENT AND RESHAPE HOW WE COME TO REMEMBER AND RETELL THE PAST?



SCAN TO HEAR MORE FROM ASHER ABOUT HIS RESEARCH

## FUTURE 1 A WORLD CONNECTED

2006–PRESENT



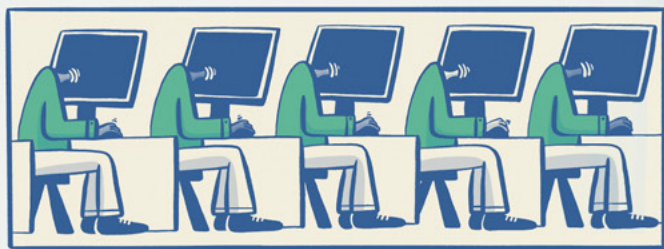
"OUR SUCCESS WILL DETERMINE HOW FAR THIS VISION OF A CONNECTED WORLD CAN GO. CONNECTING THE WORLD IS WITHIN OUR REACH, AND IF WE WORK TOGETHER, WE CAN MAKE THIS HAPPEN."  
MARK ZUCKERBERG

A VISION OF A GLOBAL COMMUNICATION NETWORK THAT CONNECTS ALL HUMANS ON THE PLANET.

HIERARCHIES WILL BE FLATTENED AS PEOPLE GAIN DIRECT ACCESS TO EACH OTHER, AND THE ABILITY TO FORM AND JOIN GLOBAL COMMUNITIES.



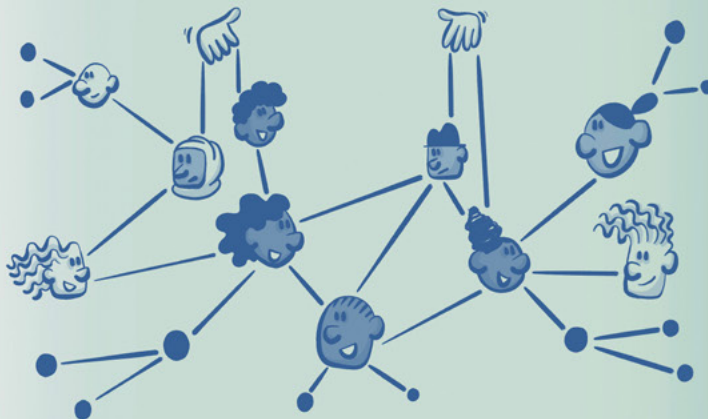
BIG TECH DRIVES FORWARD PROGRESS BY PUSHING 'DEVELOPING' COUNTRIES TO MODERNISE AND CATCH UP WITH THE 'DEVELOPED' WORLD.



TO CONNECT THE WORLD, INTERNET ACCESS MUST REACH EVERY CORNER OF THE GLOBE, THUS FACEBOOK DEVELOPS AND PROPAGATES THEIR FUTURISTIC TECHNOLOGIES, SUCH AS DRONES THAT FLY FOR SIX MONTHS AT A TIME.

## FUTURE 2 DATA ECOSYSTEMS

2009–PRESENT



A WORLD IN WHICH HUMAN BEHAVIOUR BECOMES EVER-MORE KNOWABLE, PREDICTABLE, AND RESPONSIVE TO CONTROLLABLE SIGNALS.



"USING FACEBOOK AND INSTAGRAM ADS, YOU CAN TARGET BY CONGRESSIONAL DISTRICT, YOU CAN TARGET BY INTEREST, YOU CAN TARGET BY DEMOGRAPHICS, OR ANY COMBINATION OF THOSE. AND WE'RE SEEING POLITICIANS AT ALL LEVELS REALLY TAKE ADVANTAGE OF THAT TARGETING."

SHERYL SANDBERG



SOCIAL MEDIA PLATFORMS ARE ENVISAGED AS 'ECOSYSTEMS'; USERS ARE RENAMED 'ACTIVES', AND THEIR 'ORGANIC' BEHAVIOUR IS HARVESTED FOR INCREASING ENGINEERING, SURVEILLANCE, AND AGGREGATION.

FACEBOOK HOLDS A SYSTEMS PERSPECTIVE OVER EACH ECOSYSTEM (FACEBOOK, INSTAGRAM, OCULUS), WHICH AFFORDS IT THE ABILITY TO SEE AND UNDERSTAND THE INTERESTS AND INTENTIONS OF USERS, AS WELL AS PREDICT FUTURE BEHAVIOUR.

Illustrated by  
CAMILLE AUBRY

## FUTURE 3 THE METAVERSE

2014–PRESENT

2021  
FACEBOOK BECOMES  
Meta

A NEW SOCIAL REALITY WHICH BLENDS THE PHYSICAL WORLD WITH VIRTUAL REALITY, AUGMENTED REALITY, AND ARTIFICIAL INTELLIGENCE.



PEOPLE WILL BE ABLE TO CREATE AND EXPERIENCE ANYTHING, NO LONGER BOUNDED BY THE BODY THEY WERE BORN IN, OR THE LAWS OF NATURE THEY WERE LIMITED BY.

"I BELIEVE THAT TECHNOLOGY CAN MAKE OUR LIVES BETTER, AND I BELIEVE THAT THE FUTURE WON'T BE BUILT ON ITS OWN. IT WILL BE BUILT BY THOSE WHO ARE WILLING TO STAND UP AND SAY, 'THIS IS THE FUTURE WE WANT,' AND I'M GOING TO KEEP PUSHING AND GIVING EVERYTHING I'VE GOT TO MAKE THIS HAPPEN."

MARK ZUCKERBERG



ANOTHER FUTURE?  
IF WE EQUATE THE FUTURE WITH THE NEXT TECHNOLOGICAL BREAKTHROUGH AND SILICON VALLEY VISION, WE FIND OURSELVES CLOSING A FUTURE THAT WAS ONCE ENVISAGED AS OPEN – THE FUTURE BECOMES ALWAYS THE SAME, ALWAYS THE NEXT BREAKTHROUGH, THE NEXT SILICON VALLEY BET.

HOW CAN WE IMAGINE AND ANTICIPATE THE FUTURE IN ALTERNATIVE WAYS?  
SHARE YOUR IDEAS.





# WHAT GOES INTO THE MAKING OF A SENTENCE ON CHATGPT?

“THE SEMICONDUCTOR BUSINESS IS LIKE A TREADMILL THAT SPEEDS UP ALL THE TIME. IF YOU CAN'T KEEP UP, YOU FALL OFF.”

MORRIS CHANG, FORMER CEO AND FOUNDER OF TSMC

## Semiconductor Manufacturing: TSMC

The Taiwan Semiconductor Manufacturing Company (TSMC) makes cutting-edge microchips. This is a highly complex and error-prone process that only a few companies in the world have perfected. TSMC is the only company that successfully uses extreme ultraviolet (EUV) technology to print billions of transistors on coin-sized silicon wafers. There is only one company in the world that makes EUV machines: the Dutch company ASML. One machine comes with a price tag of \$200 million.

## Graphics Processing Unit Manufacturing: Nvidia

Nvidia designs the GPUs that provided the computational power for the generative AI boom. Nvidia is a “fabless” company – it doesn’t own any manufacturing plants. All designs are manufactured by TSMC. A server comprising eight of Nvidia’s cutting-edge H100 GPUs costs approximately \$400,000. Following high demand, there is a massive shortage of these GPUs and Nvidia is the only supplier.

## Cloud Service Provider: Azure

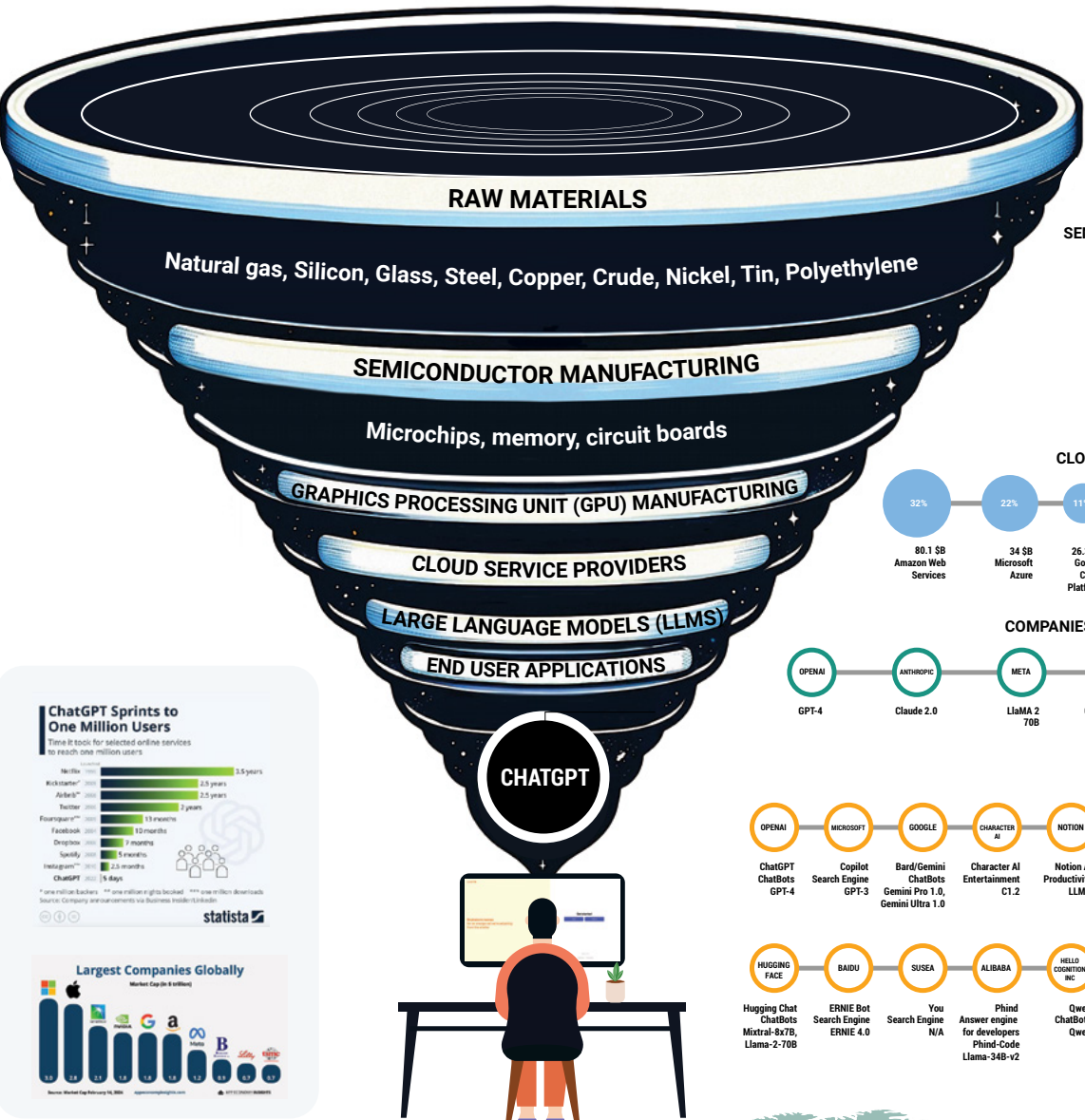
GPUs are very expensive and difficult to acquire. Instead of buying GPUs and assembling data centres, many generative AI companies opt to rent computational power from Cloud Service Providers. OpenAI has a partnership with Microsoft Azure: GPT-4 was trained on more than 10,000 Nvidia GPUs.

## Large Language Model: OpenAI’s GPT-4

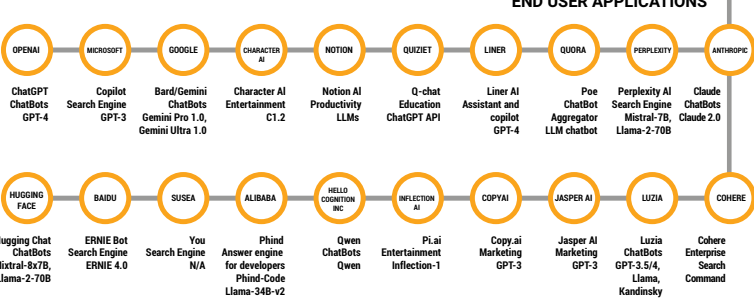
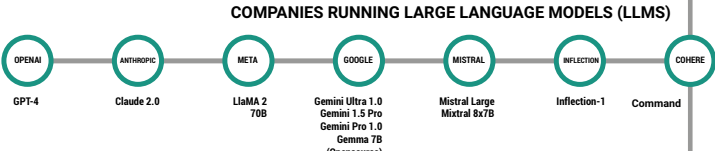
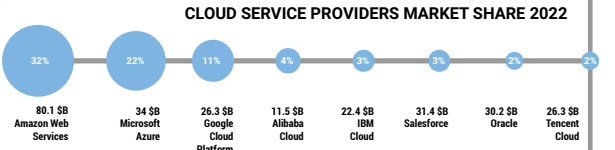
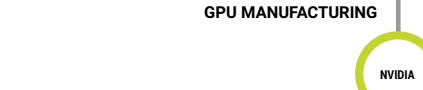
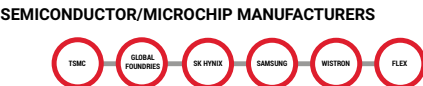
An LLM is an AI that uses neural networks trained on extensive text data to predict word sequences. It learns patterns during training and applies this knowledge during inference to perform language tasks like text generation and comprehension. GPT-4 was trained over 90 days which cost OpenAI more than \$100 million.

## Application: ChatGPT

Generating a sentence on ChatGPT is only possible because of a complex and international supply chain of know-how and technology. The ease at which text appears in the chat box could easily disguise the fact that this is the biggest computational undertaking in the history of humanity and highly capital-intensive.



## THE SUPPLY CHAIN BOTTLENECK

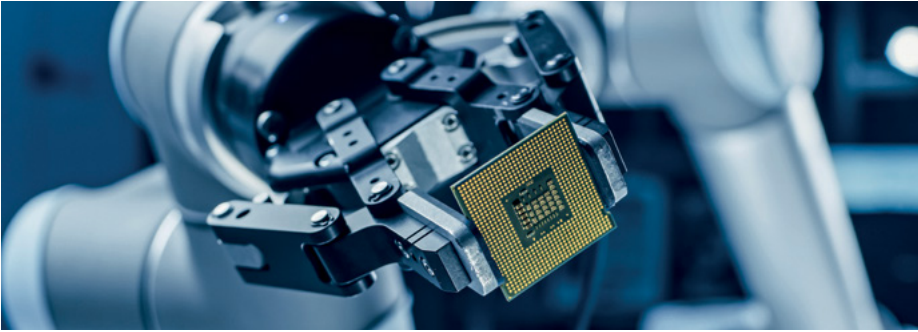


Generative AI is poised to make a fundamental difference to the functioning of economy and society. While ethical implications and consequences for the nature of work are at the forefront of debates about its impact, the technological and financial dimensions of the rise of large language models like ChatGPT have mostly remained unexamined. Dr Nils Peters’ research, with Yuanling Liao, explores the infrastructure that lies behind the biggest computational undertaking in human history, revealing the power dynamics at play.



## GEOGRAPHY OF SUPPLY CHAIN POWER

The generative AI supply chain is global, with companies in the US sitting at the top of the value chain. This includes LLM companies like OpenAI and “fabless” chip makers like Nvidia. Semiconductor manufacturing is concentrated in East Asia. Microchips from Taiwan provide almost 40 per cent of the world’s new computational power every year, and two Korean companies produce almost half of the world’s memory chips (Chris Miller, Chip Wars).



## FUN FACTS

- Many Large Language Models (LLMs) are trained on a dataset called the “Common Crawl”, containing 3.35 billion web pages or 454 terabyte of uncompressed content.
- Training runs for LLMs are highly time-and capital-intensive. Meta’s LLaMA model released in February 2023, for instance, used over 2,000 Nvidia GPUs on 1.4 trillion tokens (750 words is about 1,000 tokens). The training run took about 21 days. The estimated cost is over \$2.4 million.
- Chip designs have become so small that companies like ASML have had to invent printing techniques at the edge of known physics. They use extreme ultraviolet (EUV) with a wavelength of 13.5 nanometres, the size of five DNA strands laid side by side.

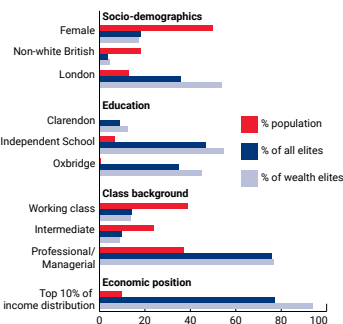


# WHO RULES BRITAIN?

## WHO ARE AND WHERE ARE THE ELITE?

The British elite are predominantly male (more than 80 per cent of current *Who's Who*) and overwhelmingly white (96 per cent).

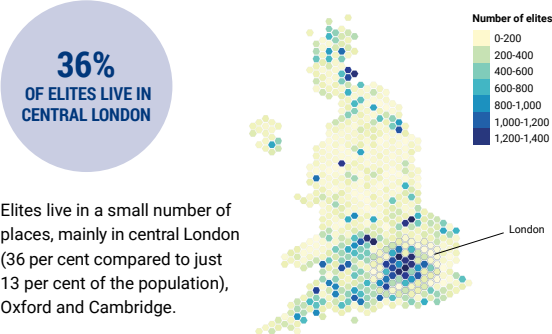
### DEMOGRAPHICS: WHO AND WHERE ARE THE ELITE?



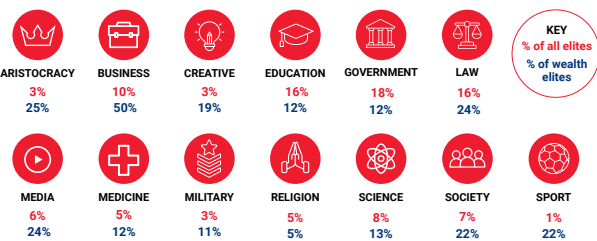
**80%**  
OF BRITISH ELITES  
IN *WHO'S WHO*  
ARE MALE

The wealth elite have a similar demographic to the wider elite, except for slightly more prestigious educational trajectories and a much higher likelihood of living in London.

### WHERE DO ELITES LIVE?



### PERCENTAGE OF ELITES WITHIN EACH OCCUPATION



The power of the clergy and military has waned since the end of the 19th century. Now elites are drawn broadly from the fields of business, politics and law. The wealth elite are more likely by far to be business leaders.

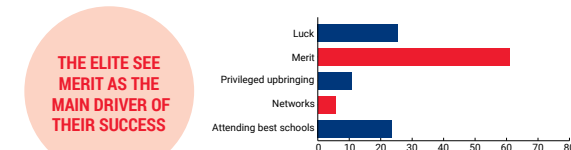
## HOW ARE THE ELITE MADE?

**"I'M JUST A CHAP SITTING IN A LITTLE HOUSE IN A SUBURB WHOSE LIFE IS, AS YOU'VE DISCOVERED, NORMAL ... QUITE ORDINARY."**  
JAMES, FINANCE (WEALTH ELITE) BORN 1945-1950

**EVEN THOSE IN THE WEALTH ELITE REJECT THE LABEL ELITE**

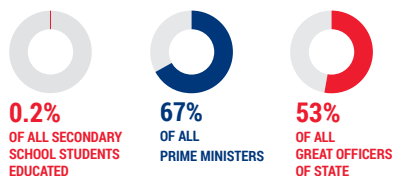
**43%** PERCENTAGE OF ELITES WHO SAY THEY ARE FROM WORKING-CLASS BACKGROUNDS BUT ACTUALLY COME FROM PROFESSIONAL, MIDDLE-CLASS FAMILIES.

### KEY FACTORS ELITES ATTRIBUTE TO THEIR SUCCESS



**THE ELITE SEE MERIT AS THE MAIN DRIVER OF THEIR SUCCESS**

Those educated at the prestigious Clarendon schools\* continue to be vastly over-represented among the elite.



\*Clarendon schools are Britain's nine most elite private boarding schools – Eton, Harrow, St Pauls, Westminster, Winchester, Rugby, Charterhouse, Shrewsbury and Merchant Taylors.

## WHAT DO WE KNOW ABOUT THE PEOPLE WIELDING POWER AND INFLUENCE IN BRITAIN?

**PROFESSORS SAM FRIEDMAN AND AARON REEVES HAVE SHOWN THAT WHITE MEN FROM ELITE BACKGROUNDS, WHO HAVE ALL TOO OFTEN ATTENDED A TINY GROUP OF PRIVATE SCHOOLS AND HIGHLY SELECTIVE UNIVERSITIES, REMAIN PROFOUNDLY OVER-REPRESENTED IN THE CONTEMPORARY BRITISH ELITE.**

The wealth elite is **0.01%** of the UK population, around **6,000** individuals



The analysis identifies an elite based on *Who's Who* – a longstanding dictionary of those reaching widely recognised positions of national influence. It further pinpoints a "wealth elite" who are both included in *Who's Who* and are in the top one per cent of the wealth distribution.

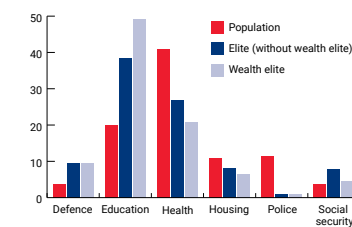
Research draws on data from the 125,000 people featured in *Who's Who* since 1897, currently representing about 0.05 per cent of the UK population, combined with probate records, survey and interview results, and data sources illuminating specific aspects of the lives of the elite including Desert Island Disc choices and UK Supreme Court judgments.



**SCAN TO HEAR MORE FROM SAM AND AARON ABOUT THEIR RESEARCH**

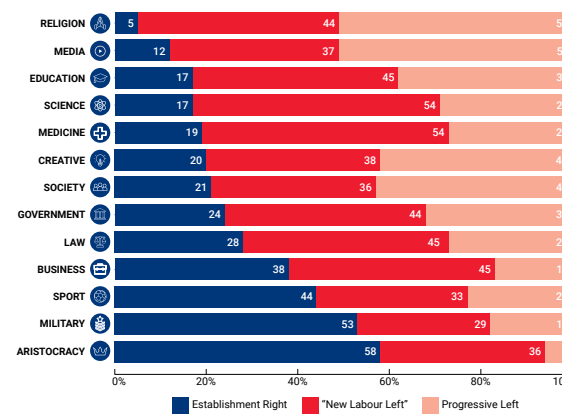
## HOW DO THE ELITE THINK?

The research was able to show how the thinking of the elite differs from the rest of the population, for example when asked what the government's highest priority should be.



**THE WEALTH ELITE THINK EDUCATION SHOULD BE THE "HIGHEST PRIORITY" OF GOVERNMENT**

### IDEOLOGICAL ORIENTATION OF ELITE OCCUPATIONS

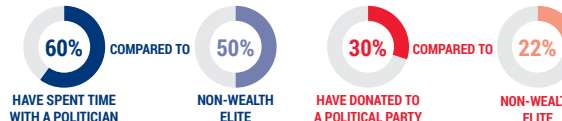
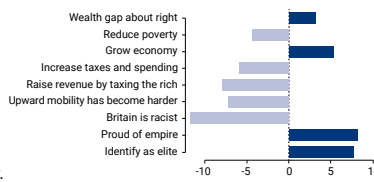


The ideological centre of gravity among elites in the military, the aristocracy, and even sport tilts strongly to the right, while elites in religion and the media are dominated by the progressive left.

While the more centrist "New Labour" left is well represented in most occupations, they are an outright majority in science and medicine.

**THE IDEOLOGICAL ORIENTATION OF THE WEALTH ELITE TILTS TO THE RIGHT**

How our elites are formed has important implications for the politics we get. Privately educated elites are more likely than other elites to be proud of empire and less likely to think reducing poverty is a priority.



The wealth elite are more politically active than other elites. Their access to positional and economic power grants them a unique ability to convert their beliefs into actions.

## IT STILL PAYS TO BE PRIVILEGED

**CLASS INEQUALITY WILL NOT BE MEANINGFULLY TACKLED UNTIL ...**

- THE LINK BETWEEN WEALTH AND ELITE STATUS IS WEAKENED
- THE DISTORTIONARY POWER OF A HANDFUL OF PRIVATE SCHOOLS IS UNDERMINED
- OXBRIDGE IS OPENED UP
- AND POWER IS REDISTRIBUTED AWAY FROM THOSE WHO REACH THE TOP OF PARTICULAR PROFESSIONS.



**FIND OUT MORE**  
Harvard University Press  
(September 2024)

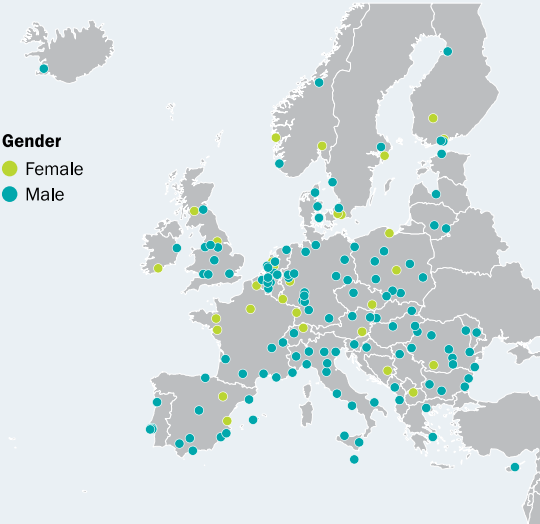


# WHO IS LEADING EUROPE'S CITIES?

The majority of Europeans live in urban areas, giving cities a critical role in addressing the continent's most pressing policy challenges, from inequality to climate change. LSE Cities' **European Cities Programme** has created a knowledge hub of key data from nearly 160 of Europe's capital and largest cities, allowing them to track the changing nature of these challenges, and how cities approach them.

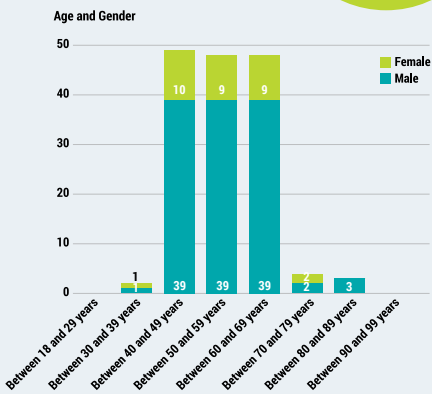
Among other things, they are monitoring the changing profile of Europe's elected city leaders, the extent to which they reflect Europe's growing diversity, and changes in the urban political landscape.

## EUROPE'S CITY LEADERS ARE LESS DIVERSE THAN THE VOTERS THEY REPRESENT



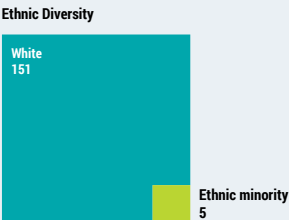
### GENDER AND AGE DIVERSITY

The average European mayor is a 54-year-old white man. There are far fewer female mayors – only one in five (20 per cent) of the leaders in our sample is a woman. Some countries are doing better than others when it comes to gender representation: five of the 11 French mayors are female.



### ETHNIC BACKGROUND

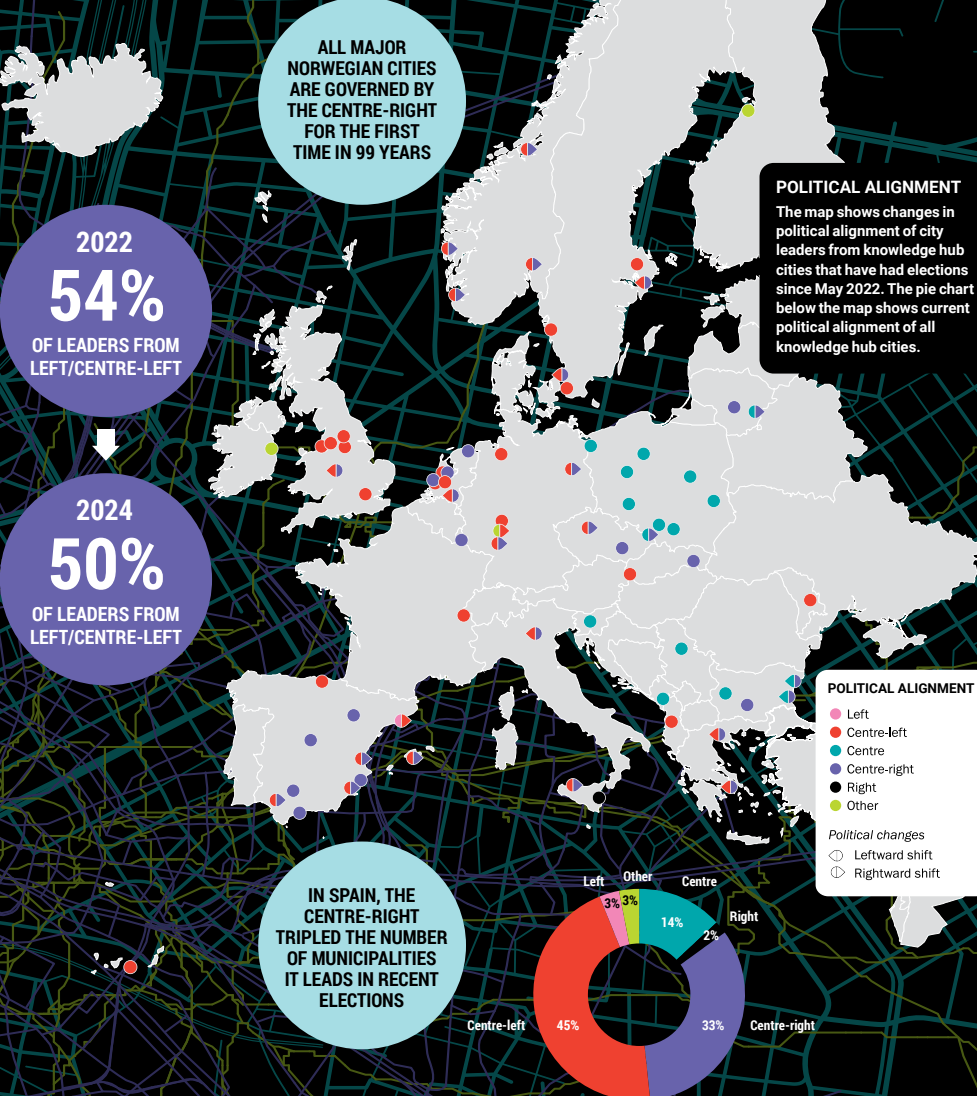
Europe's cities are becoming increasingly diverse, but at present only three per cent of cities are led by someone from an ethnic minority background.



**20%**  
OF LEADERS  
ARE WOMEN

**3%**  
OF LEADERS FROM  
ETHNIC MINORITY

## IS CITY LEADERSHIP SHIFTING TO THE RIGHT?



Europe's cities have historically leaned to the left of their nation states, although a recent rightward turn in European politics is beginning to be felt in cities too.

This shift in Europe's urban politics is likely to be explained in part by familiar concerns over immigration, cost of living and labour market disruption, but also in part by distinctively urban issues, including city hall policies aimed at curbing car use. The recent re-election of Sadiq Khan as Mayor of London, however, suggests that it is still possible to win elections on relatively ambitious green policies.

## WHAT'S NEXT FOR EUROPE?

Politics tends to be cyclical. We can't be sure if or how far Europe's cities will continue to swing right, or if and when they will swing the other way. But it seems clear that Europe's leaders will need to get better at designing and communicating green policies in ways that reconcile concerns for cost of living and day-to-day experiences of urban life with longer-term risks such as climate change.

RESEARCH BY BEN ROGERS, CATARINA HEECKT, FRANCESCO RIPA, NUNO DA CRUZ AND IMOGEN HAMILTON-JONES.

SCAN TO HEAR MORE FROM CATARINA ABOUT THE RESEARCH

**"IN MY SIX YEARS AS CITY LEADER THERE'S BEEN A SIGNIFICANT DEMOGRAPHIC SHIFT WITHIN CITY POLITICS WITH MORE WOMEN, PEOPLE OF COLOUR AND YOUNGER PEOPLE IN MY COUNCIL GROUP YET WE'VE STILL SOME WAY TO GO."**



**Susan Aitken**  
Council Leader of Glasgow (2017 - present)

**Motivation?** Having been a persistent proponent of gender balance mechanisms it was time to put my money where my mouth is.

**Political hero?** Anne Hidalgo, Mayor of Paris. She has taken on vested interests, traditionalists and sexism to bring about genuine and tangible transformation on the streets of Paris. If Paris can transform its traffic-clogged, noisy and polluted streets to make much more open spaces that people can walk, cycle and move around more freely and safely, then it gives me hope that Glasgow can do the same.

**"OVER THE COURSE OF HIS TWO TERMS AS MAYOR OF BRISTOL, MARVIN REES SAYS HE HAS UNDERSTOOD THE GROWING SIGNIFICANCE OF CITIES IN GENERAL AND CITY LEADERSHIP IN PARTICULAR."**



**Marvin Rees OBE**  
Mayor of Bristol (2016 - 2024)

**Getting more people into city politics?** Anyone waiting for the perfect invitation from the perfect party to get involved in the perfect political system will be waiting a long time. We have to be prepared to bring our imperfect selves to imperfect structures.

**Most encouraging change witnessed?** Our city's increased willingness to begin to talk about race, class, poverty and inequality – and to understand and not hide from them.

**"IF YOU ASPIRE TO HAVE A MEANINGFUL IMPACT ON SOCIETY, ENGAGING IN CITY POLITICS CAN BE THE MOST EFFECTIVE WAY TO ACHIEVE IT. IN BELGIUM, FEW PEOPLE HAVE CONFIDENCE IN NATIONAL POLITICIANS, BUT IN CITY POLITICS, IT IS STILL POSSIBLE TO COLLABORATE CONSTRUCTIVELY AND TO MAKE A DIFFERENCE."**



**Mohamed Ridouani**  
Mayor of Leuven (2018 - present)

**Advice for new mayors?** It's impossible to satisfy every citizen's needs and preferences. As a mayor, you're the keeper of the common good and the protector of the most vulnerable members of society.



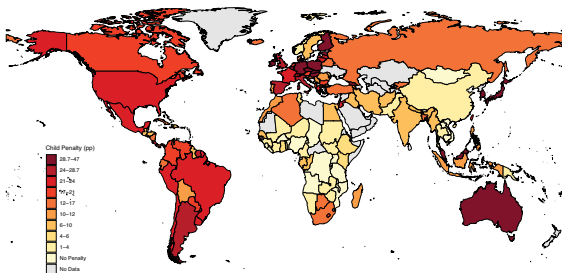
# WHO HAS THE POWER TO ADDRESS THE CHILD PENALTY GLOBALLY?



SCAN TO HEAR MORE FROM **GABRIEL** ABOUT THE RESEARCH

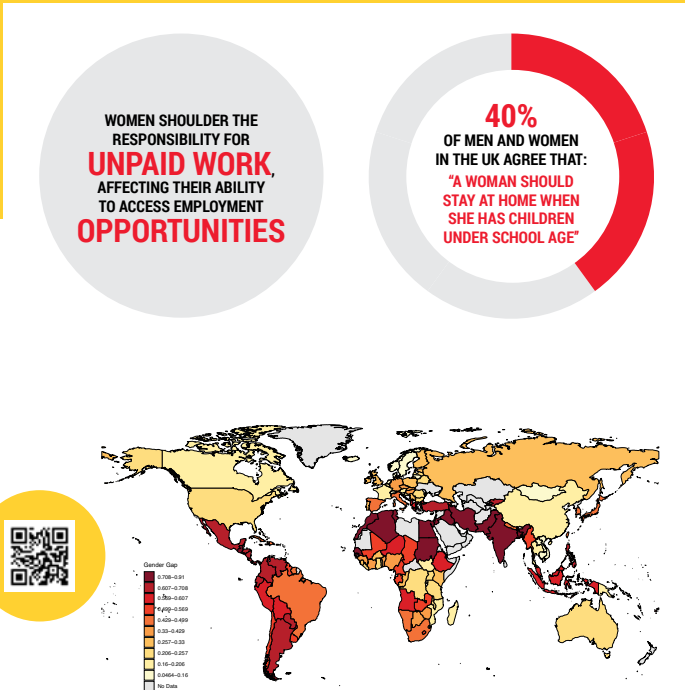
## Child Penalty Atlas

The **LSE Hub for Equal Representation** presents the **Child Penalty Atlas** ([childpenaltyatlas.org](http://childpenaltyatlas.org)) to measure the child penalty around the world. This data enables the Hub to investigate one of the root causes of gender inequality in the labour market and look at how it varies globally.



## The child penalty around the world

This heat map shows the child penalty in 134 countries around the world: the darker the colour, the higher the penalty. Almost everywhere globally, women's careers seem to suffer after they become parents.



## The gender employment gap globally

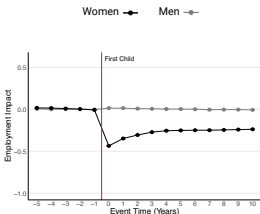
There is a wide variation in the employment gap between men and women across the world. In countries with greater gender equality, the gap is around 5 per cent, while in countries with greater gender inequality, it can be as high as 90 per cent.

## Child penalty across continents

The impact of motherhood on employment not only varies greatly between countries, but also among world regions. These graphs compare the child penalty for men and women after the birth of their first child in Europe, Africa and Latin America.

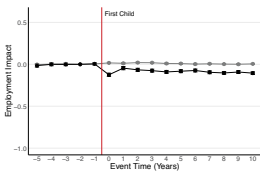
### EUROPE CHILD PENALTY: 29%

In high-income regions, child penalties are high. 80 per cent of the gender gap in employment is due to women leaving the workforce after their first child.



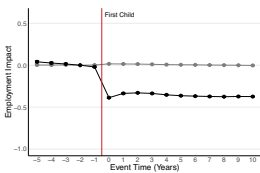
### AFRICA CHILD PENALTY: 9%

In the poorest areas, women tend to exit the workforce before motherhood and directly after marriage. Here, lower child penalties only explain 10 per cent of the gender gap in employment.



### LATIN AMERICA CHILD PENALTY: 38%

In middle-income countries, women are more likely to work after marriage, but many quit permanently after becoming mothers. In Latin America, 38 per cent of working mothers leave the labour force after having a child, and 37 per cent remain out of work 10 years later.



Having children requires money, time, resources and energy. Yet, parenthood impacts men and women differently. Mothers spend more time on unpaid childcare and less on paid employment, affecting their long-term economic opportunities. This is known as the child penalty, or the motherhood penalty. This is the average amount by which a woman's probability of being employed declines in the 10 years after the birth of her first child relative to men.

## AS OF 2024...

- 24%** OF WOMEN LEAVE THE LABOUR FORCE IN THE FIRST YEAR AFTER HAVING THEIR FIRST CHILD
- 17%** ARE STILL ABSENT AFTER FIVE YEARS
- 15%** ARE STILL ABSENT AFTER 10 YEARS



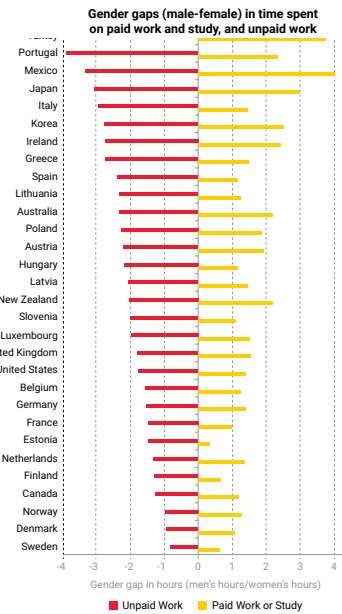
WHAT IS DRIVING THIS CHILD PENALTY AND WHAT ROLE CAN POLICYMAKERS PLAY IN FIXING IT?

## The impact of gender norms

The average working-age woman in the UK earned 40 per cent less than her male counterpart in 2019. This pay gap vastly increases after parenthood. This gap seems to suggest unequal parental involvement in unpaid care work shapes inequalities in the job market. These inequalities are exacerbated by gender norms and stereotypes that are reinforced by government policies and wider society.

**MOTHERS WHO EARN MORE THAN THEIR MALE PARTNERS BEFORE CHILDBIRTH ...**

**... ARE MORE LIKELY TO REDUCE THEIR WORKING HOURS IN THE YEAR AFTER CHILDBIRTH**



THE UK GOVERNMENT "STAY HOME, SAVE LIVES" POSTER, RELEASED DURING THE COVID-19 PANDEMIC, WAS WITHDRAWN AFTER IT SHOWED **ONLY WOMEN** UNDERTAKING DOMESTIC CHORES

**GENDER INEQUALITY CANNOT BE ELIMINATED WITHOUT ALSO ADDRESSING THE CHILD PENALTY**

**WHAT POLICIES COULD HELP ADDRESS THE CHILD PENALTY?**



### CHALLENGE GENDER NORMS

Change attitudes through policies that support more equal sharing of responsibility between parents rather than reinforcing traditional gender roles.

### TARGET OUTCOMES FOR THE CARER

This includes training to aid re-entry into the labour force after time out, legislation updating workplace hiring, promotion and evaluation processes, and increased childcare facilities in the workplace.

### MOBILISE WOMEN'S TALENTS FOR GROWTH

Today women are, on average, at least as educated as men, but their talents are not fully utilised. Better balance of paid work between men and women will benefit economic growth.

### PRIORITISE GIRLS' EDUCATION

In developing countries, governments should prioritise and invest in girls' education to address the high entry barrier to the labour market.

### IMPROVE THE RIGHT TO FLEXIBLE WORKING

Flexible working makes it easier to balance work and family life. Strengthening the right to flexible working means more women can remain in and return to work.

RESEARCH BY  
**PROFESSOR HENRIK KLEVEN,**  
**PROFESSOR CAMILLE LANDAIS,**  
**AND GABRIEL LEITE MARIANTE**

Hub for Equal Representation  
in the economy (H.E.R.)

**STICERD**  
Survey and Topical International Centres  
for Economics and Related Disciplines  
Research at LSE



# SEEN: MAKING WOMEN'S LABOUR VISIBLE

Women's labour, largely unpaid and underpaid, is missing from economic policymaking and is not recorded in key economic measures like GDP.

## THIS MAKES WOMEN'S CONTRIBUTIONS TO SOCIETY INVISIBLE.

These artworks from the artbook SEEN were produced as part of the *Invisibilised Labour* project undertaken by **Roos Saalbrink**. The artbook resists the erasure of women and their contributions to the economy, and challenges dominant narratives about women's worth.



SCAN TO HEAR MORE FROM **ROOS AND JUNO** ABOUT THE PROJECT  
LISTEN TO **CLARISS** READ "I HAVE A MAID"

### I HAVE A MAID

I have a maid  
I have a maid.  
She is just under 18.  
I pay her \$60 per month,  
It's enough for her upkeep.  
Besides, she is stay in  
So she eats my food,  
Bathes with my soap  
And she sleeps in my house,  
Free accommodation!  
She doesn't have much to do either,  
She takes care of my two children,  
Cleans my 3 bedroomed house,  
And of course she cooks sometimes  
Especially that my husband is a picky eater.  
She does the dishes, and the laundry too...

Extract: **I Have a Maid**  
Clariss Rufaro Masiya

**Acknowledgement**  
**Aida Namukose** is an ecofeminist and photographer based in coastal Kenya.  
**Clariss Rufaro Masiya** is an ecofeminist and gender equality and social inclusion specialist based in Zimbabwe.  
**Halina Rauber-Baio aka Juno Algaravia** is a feminist collagist from Brazil.  
**Kashushu** is a visual artist from Uganda who specialises in contemporary digital art.  
**Olusayo Ajetunmobi aka Ajet** is an artist and illustrator, whose work explores cultural memory.  
**Roos Saalbrink** is an advocate who loves to create space to discuss feminism and economics.



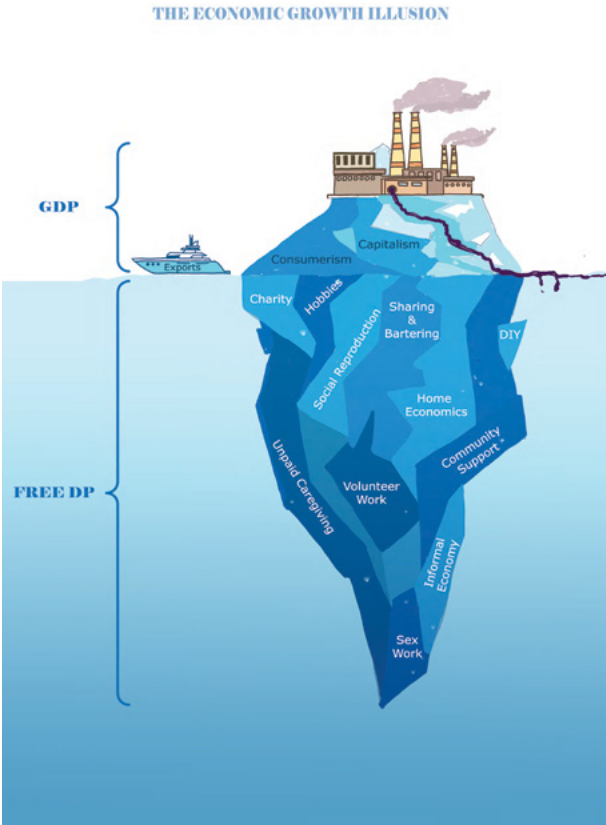
**A Bright Future**  
Kashushu

“ Advocating for women's invisible labour, it leaves me in a place of devastation. I feel like I am unseen. Because I'm only seen as a passive beneficiary of GDP. I'm not seen as a contributor to it, so it kind of leaves me in a place where I feel exploited.”



**Invisibilized Labour**  
Aida Namukose

“ My body feels exhausted. I feel like changing the current system or the beliefs, especially when talking about gender is exhausting. Fighting the good fight. But I believe it's worth it in the end.”



**GDP vs FREE DP**  
Olusayo Ajetunmobi aka Ajet

“ GDP doesn't include the social production of women. It wasn't meant to serve marginalized groups. It was only meant to serve colonial masters, particularly in Africa.”



**New Horizons Within**  
Halina Rauber-Baio aka Juno Algaravia

Funded by:  
**Atlantic Fellows** | FOR SOCIAL AND ECONOMIC EQUITY



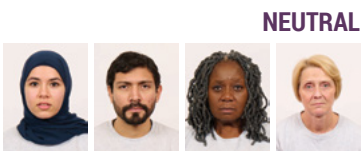
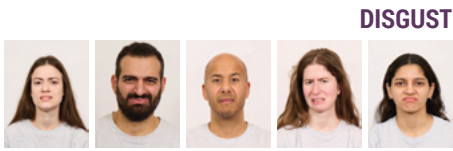
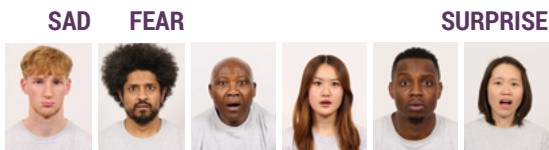
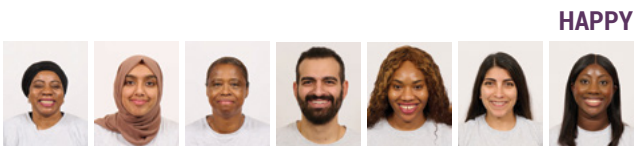
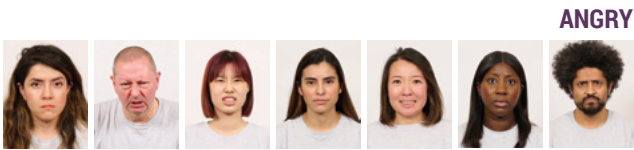
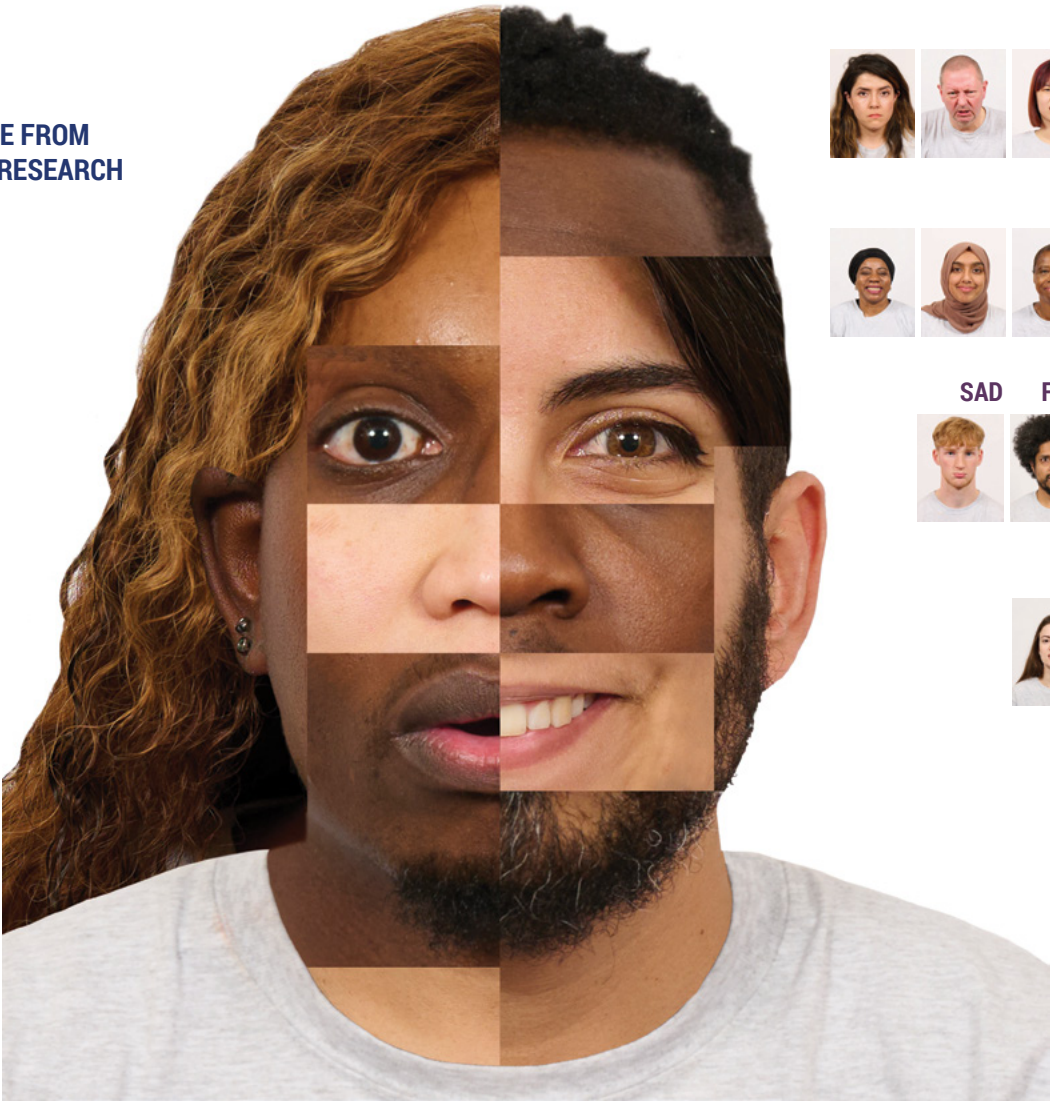
# MAKING RESEARCH LESS... WEIRD?



SCAN TO HEAR MORE FROM  
DEEMA ABOUT HER RESEARCH

Most face libraries used in psychological research include only younger, white participants from Western, Educated, Industrialised, Rich, Democratic (WEIRD) cultures. These databases are not representative of the diverse range of facial characteristics and expression found in general populations globally, and this presents a major challenge to the quality and impact of research findings.

The study of face perception plays a pivotal role in advancing our understanding of social dynamics, and contributes to real-world developments in fields such as medicine and technology. Dr Deema Awad's project calls for more researchers to report the demographics of their study participants, and paves the way for more representative research through the creation of a new, inclusive face database.



NEUTRAL GAZE  
TO SUBJECT LEFT

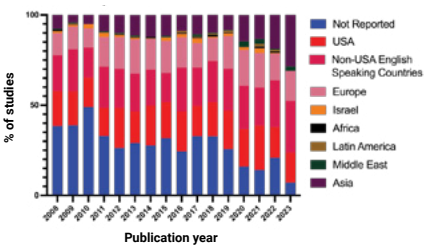


NEUTRAL GAZE  
TO SUBJECT RIGHT



FACE PHOTOGRAPHY BY CARL GOODWIN

## FACE PERCEPTION (2008-2023): PAPERS BY POPULATION LOCATION



This diagram shows where in the world studies into facial perceptions have been carried out since 2008. 81 per cent of the 3,217 papers with specific location details were carried out in Western countries.

85%

85 PER CENT OF  
STUDIES HAVE NOT  
REPORTED THE AGE  
OF PEOPLE USED IN  
STIMULI IMAGES.

81%

81 PER CENT OF  
STUDIES SINCE 2008  
CARRIED OUT IN  
WESTERN COUNTRIES.

70%

WHERE ETHNICITY IS  
REPORTED, NEARLY 70 PER  
CENT OF FACIAL STUDIES  
FEATURE INDIVIDUALS  
WHO ARE WHITE.

50%

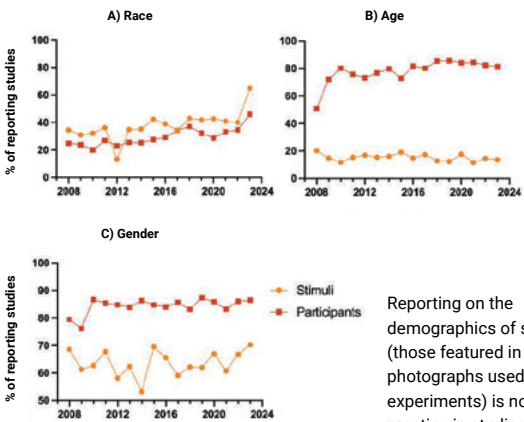
GENDER REPORTING IN  
STIMULI HAS FLUCTUATED  
HUGELY SINCE 2008, NEVER  
RISING ABOVE 70 PER CENT,  
AND DROPPING TO JUST  
OVER 50 PER CENT IN 2014.

## WHAT'S THE SOLUTION?

LSE's representative face library will include 36 categories for the identification of images, including wide ranges of age, gender, and ethnicity. The database will also include differing evaluations of photographs in terms of attractiveness, trustworthiness, dominance, credibility, and basic emotions.

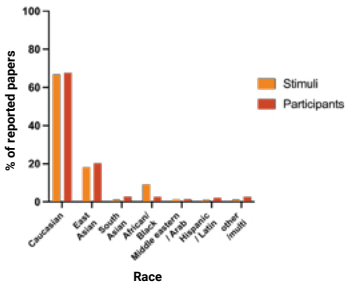
By providing a more representative sample of faces, this project will improve face perception research and have a significant impact on the psychological and behavioural sciences. The diverse face database will serve as a facial library for researchers around the world, and will enable them to engage with more representative sampling in their studies, ultimately leading to a deeper understanding of the role of faces in psychological research.

## TRANSPARENCY IN STIMULI AND PARTICIPANTS DISCLOSURE



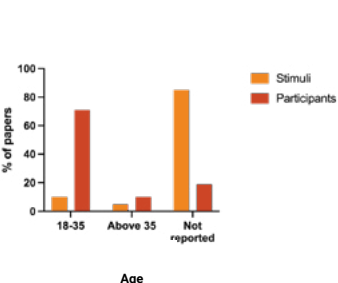
Reporting on the demographics of stimuli (those featured in photographs used in experiments) is not standard practice in studies.

## RACE DIVERSITY



This graph shows the race distribution of people presented in stimuli, and participants, for studies with available data since 2008. The vast majority of facial studies feature individuals who are white at almost 70 per cent.

## AGE DISTRIBUTION



This graph shows the age distribution of people presented in stimuli, and of participants, in face perception studies since 2008. Around 85 per cent of studies have not reported the age of people used in stimuli images.



# THE TABLOID EFFECT

READERSHIP

SHOWBIZ

EMOTIONS

ACCESSIBILITY

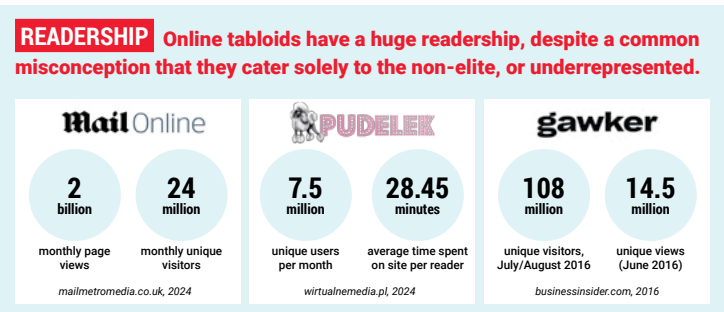
TRUST

COMMENTS

## Who would have thought?! Guilty-pleasure online tabloids predict political outcomes where traditional broadsheets fail

In the run-up to both the Brexit referendum and to Trump's US election win in 2016, online tabloid newspapers, including the UK's *Mail Online*, the US's *Gawker* and Poland's *Pudelek*, accurately anticipated voting outcomes, whilst broadsheets failed to capture the public mood.

**Dr Helena Chmielewska-Szlajfer's** analysis of over 2,000 online articles, and over two dozen interviews with tabloid journalists, reveals how the tabloid penchant for celebrity gossip, sensationalist copy and forthright political opinion, often dismissed as lowbrow and far removed from traditional political surveys and expert analyses, actually helped tabloids to engage and align with the views of the general public.

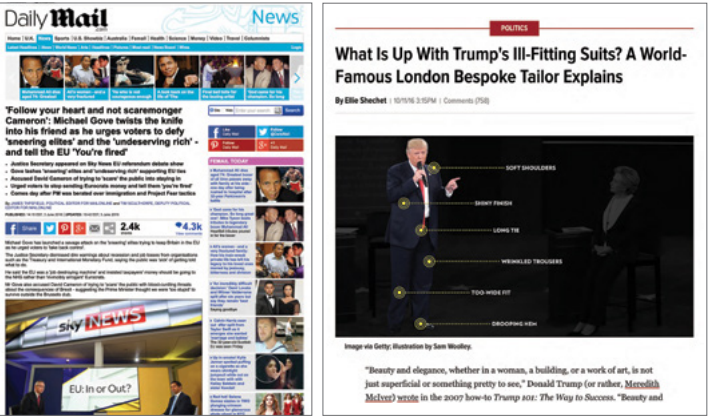


**EMOTIONS** Where broadsheet political analysis may focus on higher-level policy and ideals, tabloids tap into, and leverage, individual experience and emotional responses.



**ACCESSIBILITY** Like many tabloids, the *Mail Online* credits the secrets to its success with: "editorial excellence, dynamic and engaging content, and a picture-led, easily navigable format available any time, anywhere, on any device." dmghmedia.co.uk

**TRUST** Articles in online tabloids are written by professionals and are bound by standard press regulations. Professional titles such as "Political Editor" and the inclusion of comments from industry experts help the stories to carry authority and journalistic weight.



**COMMENTS** In the US elections and UK referendum of 2016, tabloid comment sections were forums for a range of viewpoints. In contrast to more traditional surveys which tried to solicit opinions from members of the public, readers used online platforms to actively volunteer their views.

