

Issue N°.1

# London ideas

A magazine about urban innovation

## *Inside this issue*

3D-printed homes / Artificial Intelligence tackling crime / Peer-to-peer lending for builders / Celebrating Gaybourhoods / Autonomous boats in cities / Navigation tech for the blind / Building over stations, and more...



**The future of cities depends on their ability to innovate, re-invent and develop new ideas, not only to tackle their most pressing challenges, but also to make them more successful, inclusive and livable.**



# Introduction

Welcome to the first edition of *London ideas*.

Like all cities, London's future depends on its ability to innovate, re-invent and develop new ideas.

But new ideas don't emerge from nowhere. They need fertile ground and a hospitable climate – as well as spaces where they can be nurtured, tested, discussed and promoted.

As the capital's dedicate think tank, it is Centre for London's role to create such a space. We've created this magazine to champion new thinking that has the potential to transform London – and cities around the world – for the better.

*London ideas* will be published twice a year. Alongside the magazine, Centre for London is also running a related series of regular events at which entrepreneurs and innovators present and discuss their ideas. Some of the ideas from our first event are featured in these pages.

*London ideas* builds on the longstanding partnership we have with Capital & Counties Properties PLC, and I'd like to thank them personally for their ongoing support. We hope the thinking developed here will prove helpful to them, to the capital that we love, and to cities everywhere.

My thanks also go to CityLab for working with us on this project and helping us to share *London ideas* with a global urbanist audience.

If you have an idea that you think we should feature, or you would like to present at (or just attend) one of our *London ideas* events, please do get in touch. You'll find our contact details in the back pages of this magazine.

**Ben Rogers,**  
Director, Centre for London



# Foreword

It is with great pleasure and enthusiasm that I am writing the Foreword for this inaugural issue of *London ideas*. This magazine – and its associated series of events – is the latest collaboration with Centre for London that Capco is proud to support.

*London ideas* brings to life, in a single publication, some of the most fascinating and dynamic innovations from cities around the world. In this first issue, *London ideas* covers everything from 3D-printed homes in Milan to apps that combat air pollution, new Danish models for intergenerational living, and the many dimensions of mapping. We also look at how AI can help tackle crime in the capital – currently one of the city’s most worrying challenges.

I am particularly enthused by the interview with the Big Thinker, MIT Professor Carlo Ratti, whom Capco welcomed to the University of Cambridge last summer. Carlo, a Visiting Fellow in the Future Cities programme we support, is among the world’s foremost thinkers on the smart city. His insights and ideas are like urban gold dust.

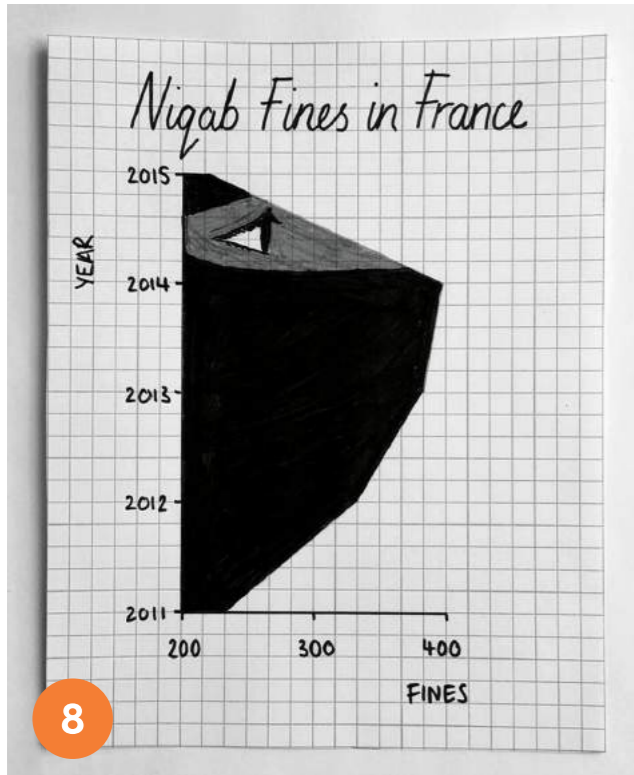
Since the launch of *Systems & Empathy: The London Recipe* in 2014, and through nine editions of *London Essays*, Capco’s partnership with Centre for London continues to be a rich source of inspiration for our two great estates – iconic Covent Garden and the new neighbourhood emerging in Earls Court. Our planning, design and delivery teams work hard to incorporate the strategic and practical inspirations that flow from our partnership: 2017’s Growing Well workshops and 2018’s *London ideas* quick-fire presentations are two powerful examples of this. At Capco, we listen and learn.

Diversity in all its dimensions is also central to London’s originality and success. London’s unique heritage, as the legacy of the Great Exhibition outlined in this edition testifies, has been forged over centuries by the collision of brilliant people and exciting ideas. We support *London ideas* wholeheartedly because innovation – and investment in those who make ideas real – is essential for any great metropolis to thrive. And, in these uncertain economic times, innovation is a more important factor in the capital’s fortunes than ever before.

**Ian Hawksworth,**  
Chief Executive, Capital & Counties Properties PLC

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# London ideas recommends...

In May, we held the first ever *London ideas* event. Here, our attendees recommend the people to follow as well as the podcasts, apps and websites that will keep your finger on the pulse of innovation.

## Watch

### London tube map

In this excellent TED talk, designer Michael Bierut (Partner in the New York office of Pentagram, Founder of Design Observer and a teacher at Yale) tells the story of the accidental success of one of the most famous maps in the world – the London Tube map – and explains how it set the standard for navigating metro systems in other cities.  
[ted.com/series/small-thing-big-idea](http://ted.com/series/small-thing-big-idea)



©TfL from the London Transport Museum collection

## Download

### Londonair

Concerned about air pollution? The London Air app displays the latest air pollution levels recorded at more than 100 monitoring stations in Greater London, and can send you notifications if the air quality drops below a certain point in your chosen area. Developed by the Environmental Research Group at King's College London.  
[londonair.org.uk](http://londonair.org.uk)



## Follow

### Heidi Alexander

Heidi Alexander, former MP and newly appointed Deputy Mayor of London for Transport, responsible for delivering the Mayor's ambitious strategy. Keep one eye on her Twitter feed, which is set to become full of the latest from TfL.  
[@Heidi\\_LDN](https://twitter.com/Heidi_LDN)



### Mona Chalabi

A journalist and filmmaker who really loves numbers, Mona Chalabi takes data and turns it into playful graphics. Currently Data Editor at the Guardian US, Chalabi makes sense of numbers even for those whose eyes normally glaze over at the sight of a chart. Her work shows that complex data can be both understandable and funny.  
[monachalabi.com](http://monachalabi.com)  
[@monachalabi](https://www.instagram.com/monachalabi) on Instagram



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## Listen

### Skylines

CityMetric's Skylines podcast is fronted by Jonn Elledge and has a lively take on business, politics, transport, the built environment, and ideas for cities. As an arm of the *New Statesman*, Skylines is global in outlook but with a big emphasis on London.  
[citymetric.com/content/skylines-podcast](http://citymetric.com/content/skylines-podcast)



# CITYLAB

## Read

### Citylab

For original thinking and fresh journalism on the biggest urban issues of our times, look no further than CityLab. Covering design, transport and environmental issues, CityLab is concerned with equity and quality of life in cities across the world – essential reading for all urbanists.  
[citylab.com](http://citylab.com)

### 99% invisible

99% Invisible is a podcast about the unnoticed architecture and design that shapes our world. Fascinating stories about everything from why toothbrushes are the shape they are (spoiler: not for our convenience) to bike racks that exist mainly to deter rough sleepers and clever ways to keep cars out of "citizen spaces" in Barcelona.  
[99percentinvisible.org](http://99percentinvisible.org)



©Roman Mars



### Flâneuse

*Flâneuse: Women Walk the City in Paris, New York, Tokyo, Venice and London* – part cultural history, part memoir, Lauren Elkin's book explores the ways in which women writers and artists have found personal freedom and inspiration by walking through cities. Published by [penguin.co.uk](http://penguin.co.uk)

# The data city as public experiment?

*Jonathan Gray with Noortje Marres*



**Above:** Panorama of London, Claes Visscher, 1616

**Right:** Diorama of London, 2010



©Sohei Nishino

Cities have long been imagined as “machines for living,” and today's data technologies carry the promise of making them more “intelligent” - more attuned to the lives of citizens; better able to ensure feedback and the re-adjustment of relations between people, environments, and institutions.<sup>1</sup> How might data, and data culture, play a role in reshaping city life, for whom, and to what end?

## **Multiplying accounts of city life**

The life of a city may be understood from accounts and artefacts such as maps, music, fiction, films, plans, photographs, paintings, newspapers, conversations, reports, records, statues and street furniture. Such items reflect certain aspects of urban life and leave others out: the schematic abstraction of tube maps highlights sequences of stops for transport users; monuments relate public spaces to historical events; photographs portray scenes in accordance with certain political or aesthetic visions. The significance of such things depends on who uses them and how.

Cities have collected data in order to organise city life for a long while: recording inhabitants, property, crimes, births, marriages and deaths. Such records are often a byproduct of the running of the city, but can also reflect the activities of other bodies including the state, companies, charities, churches, journalists, artists and activists.<sup>2</sup> Digital technologies multiply the sites where data is made, where it is made sense of and made actionable. The clicks, pings, pushes and swipes of card machines, phones, meters, sensors, and the growing repertoire of network-enabled objects associated with the Internet of Things make for a different kind of data than the formal records kept by bureaucracies. They often record activities and are not always tied to individuals; they are increasingly used to monitor, model, estimate, allocate, optimise, nudge, manage and display urban activities.



©London Datastore

**Above:** City Dashboard

While the contexts of creating and using data may seem utterly practical and mundane, the visions and aesthetics associated with them can be sweeping, panoramic, sometimes even sublime.<sup>3</sup> Just as balloon flights and panoramas were said to enable new “scopic regimes” and perspectives on the city,<sup>4</sup> today's data technologies provide apparently comprehensive insights into the particulars of urban living: a sudden increase in “footfall” in a given street, a neighbourhood where the lights stay on at night longer than elsewhere. They suggest ways of knowing intimate details of urban life at a distance, as millions of transactions are depicted as constellations on sprawling maps or as pulses in animated video.<sup>5</sup> Data work creates a culture that ends up not just in dashboards or boardrooms, but also in exhibitions and coffee table books.

The multiplication of digital data places serious responsibilities on its producers, as well as on analysts and regulators, to avoid surveillance and discrimination. We need responsible practices to safeguard, secure and anonymise data (as well as to prevent its collection) to be seen as a matter of ethical concern, not just of compliance.<sup>6</sup> But the undoubted need for precaution shouldn't make it impossible to be inventive with urban data. Indeed, insofar as digital technologies make it possible to gather data pertaining to activities rather than named persons, they may have the potential to shift the focus from surveillance of individuals to creating new different kinds of data collectives.<sup>7</sup>

**Below:** Selfiecity  
London

**Right:** Pulse Twitter Visualisation in the  
Museum of London Cafe, 11 March 2018

### Machines for living differently?

Many cities are in the process of being “smartened”, with data companies and social enterprises hosting labs, incubators, meet-ups and startup initiatives. To this end, data from hospitals, schools, universities and other institutions is opened up and used beyond conventional settings. London's Datastore<sup>8</sup> offers hundreds of datasets for downloading which are used as the basis of publicly available apps and reports. Cities are also implicated in data-making coordinated from outside the city (through multinational technology companies or national and international agencies) which render city dwellers as administrative subjects, national citizens, and consumers.

Social media platforms such as Facebook amass data through what has been called the “double logic” of the



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LONDON

as seen through 3,691,003 Images  
posted on Twitter, from Nov 2012 to July 2014.

HTTP://SELFIECITY.NET/LONDON

platform – centralising data collection while distributing platform features through which data is collected.<sup>9</sup> The self-declared contribution of such platforms is to enable us to live otherwise (to make new friends, visit new places); but they equally affect existing ways of doing, requiring new policies and public oversight.

Cities seem well positioned to use regulatory mechanisms to intervene in the activities of multinational companies on the ground – as in the decision not to renew Uber's license in London, or to restrict the activities of Airbnb in Berlin. But the real potential benefit to cities – the development of alternative, public-minded frameworks and methodologies for defining, designing and intervening in data – requires the involvement of civil society. This is what we mean by public data experiments.

### Experimenting on or experimenting with?

Proponents of the smart city invite us to envision the city as a “living laboratory”, a term that has been enthusiastically adopted around the world.<sup>10</sup> This metaphor frames our living environments and lives as open to experimentation and modification. But the role of a city dweller is very different from that of a laboratory subject: we make sense of our own lives and actively participate in defining our world in ways beyond the scope of analysts. Data offers opportunities for city dwellers to make sense of the city themselves: to appropriate it creatively. Data can make visible urban collectives in which we participate as inhabitants, passengers, visitors, or carers. Which other streets are organising play streets<sup>11</sup> in London and what could we learn from them?

Urban data does not just represent city life, it also renders it intelligible. The way in which digital technologies render data (spreadsheets, databases) should not be understood as merely making visible behaviour as it is naturally “given”. Data infrastructures should be understood not just optically (as lenses or microscopes), but as scripting or framing devices, which actively format the activities they purport to measure.

In over-emphasising the capacities of data to denote aspects of city, we may under-emphasise other capacities: what it can tell us and how it can bring people together. Data technologies do more than merely monitor urban life. They may also shape it, inviting users to take on the role of participants and play an active role in defining and taking action. For this reason, researchers suggest that data infrastructures can be considered in terms of their relations rather than as “things”.<sup>12</sup>

### Public experiments with urban data

What then might urban digital data do for city dwellers? What counts and who decides? Who and

what do data infrastructures draw together? What capacities do they confer, and to what end? Could data and data technology enable different forms of participation in the city? In addition to smartening and optimising cities, data is also being used as the basis for other kinds of public experimentation.

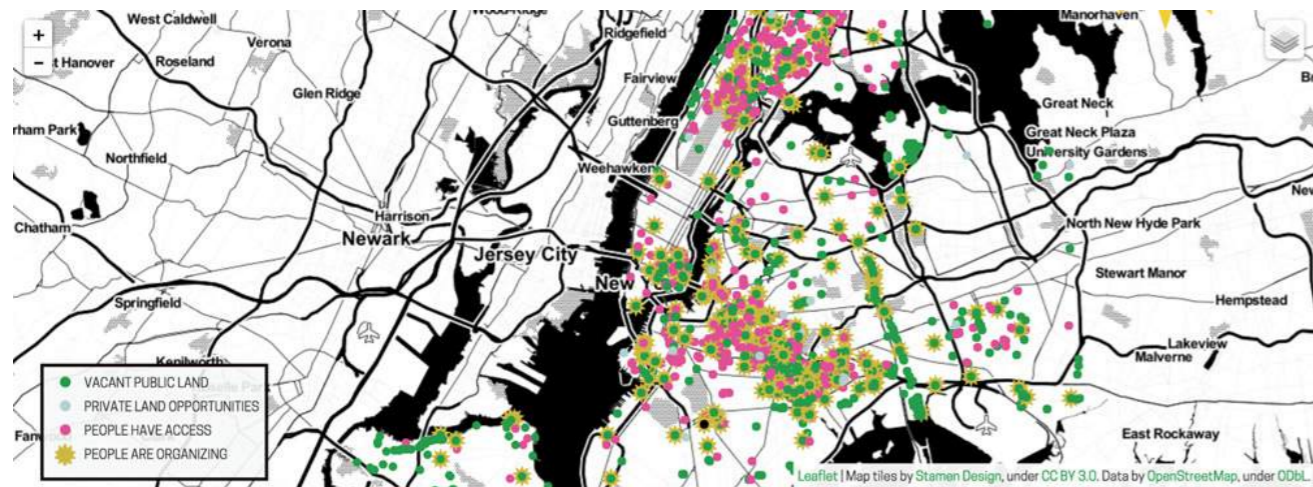
Many big data experiments treat parameters and questions as fixed in advance. But data may also involve non-experts in research: considering what is asked, which problems are deemed important, and which categories guide interpretation. Surveys and opinion polls solicit citizens to take positions on the issues of the day through interviews, focus groups or the ballot box. Data technologies enable other means to elicit, articulate and evaluate public concerns at different scales.

As city dwellers, we do not always have the time and/or “good enough” reasons to participate in governance through formal public consultations. Could data technologies help realise alternative, more flexible and creative ways of engaging city dwellers? Data makes possible not only new ways of knowing and governing, but also new types of experiments in participation.<sup>13</sup> It may serve as an alternative device for responding to urban issues across space, time and social settings. Could data diversify how issues, things and people are involved in city life?

### Data and urban issues

There are many ways that data can be put to work in civic settings besides borrowing from practices in governance, management and commerce. In some projects, official data is repurposed to change how people can relate to cities. For example, Code for America's Adopt-a-Hydrant<sup>14</sup> project enables “community members to volunteer to take care of local infrastructure like fire hydrants in severe weather”. The site enables users to find hydrants in their vicinity and maintain them during extreme weather conditions, such as snow storms. The project is open-source, and the code has been used in other cities, giving rise to counterparts such as Adopt-a-Siren<sup>15</sup> and Adopt a Drain.<sup>16</sup>

On the one hand, such projects signal a worrying reluctance on the part of some governments to take responsibility for running cities, advancing a shallow “solutionism” compatible with austerity and privatisation.<sup>17</sup> But given how difficult it can be to force the state to take responsibility, they also demonstrate the commitment of citizens to make cities liveable. The 596 Acres<sup>18</sup> initiative similarly repurposes official data to encourage city dwellers to (re-)appropriate land, lots, and other spaces in the city, bringing them into “resident stewardship”, by facilitating community organising efforts.



Above: Living Lots NYC project

Official data can be re-used to address different kinds of questions and concerns from those for which it was intended. In New York, data that was originally gathered to monitor crime has been repurposed by journalists and activists to highlight problematic and discriminatory policing practices.<sup>19</sup> In the UK, a network of local data journalists has gathered data from PDF documents in order to identify and report on cuts to council spending.<sup>20</sup> In Manchester the TaxHack<sup>21</sup> initiative has combined data on public procurement with company ownership information in order to identify which city contractors use tax havens. Activists used scraped data from Airbnb's website to show how official datasets had been "photoshopped"<sup>22</sup> to remove unwanted listings.

Other projects make their own data. In Chicago, a map-based reporting system is being used to highlight the lack of residential recycling facilities.<sup>23</sup> Distributed data-gathering operations can be used to create what anthropologist Helen Verran describes as "enumerated entities: objects of concern that emerge from diverse practices of numbering and counting."<sup>24</sup> Participatory initiatives enumerate aspects of city life that may be overlooked or under-represented in official data, including urban ecology (such as trees,<sup>25</sup> hedgehogs<sup>26</sup> and bees)<sup>27</sup> cyclists and pedestrians,<sup>28</sup> wheelchair accessible features,<sup>29</sup> public space usage<sup>30</sup> and rough sleepers.<sup>31</sup>

Data can stimulate public imagination, facilitating the exploration of different possible futures.<sup>32</sup> The Public Data Lab's<sup>33</sup> Save Our Air<sup>34</sup> project explores how data can be used not just to identify pollutants but also to explore different ideas about who is responsible for tackling it. Data technologies can thus bring to light issues of concern and raise wider questions of who should be accountable and how responsibility should be distributed between governments, citizens and private actors.

Finally, data can enable different ways of experiencing cities. Experiments in "citizen sensing" explore public involvement in the use of digital sensors to attend to environmental pollution, flora and fauna, and damp in homes.<sup>35</sup> Some of these projects aim to materialise data beyond the screen, such as the Yellowdust<sup>36</sup> project, which translated air quality measurements into clouds of yellow mist in Seoul, South Korea. "Data walks"<sup>37</sup> invite participants to locate material signs of data infrastructures shaping city life, such as credit-card based bike lockers, and reflect on how data might be used differently (for example by simplifying access to public facilities).

Below: Yellowdust project in Seoul



©Yellowdust

### Whose data experiments?

What ways of knowing the city can data give rise to? Which forms of citizenship, sociability and subjectivity do they enable? As well as implementing and improving administrative, economic and technical schemes, data projects can enlist citizens as sensors, auditors, entrepreneurs, witnesses, hackers, users, curators, carers and investigators.

These offer different ways of participating - in research, governance and ownership - using both centralised data platforms and open data commons. Both are at risk of appropriation; and the social, moral and political ends they serve may shift in the process of their implementation. It is consequently vital to define the different forms of knowledge and politics they make possible as precisely as we can.

Data can allow for public experimentation, enabling citizens to examine creative and responsive ways to make cities legible and liveable. The crucial question remains how, by whom and to what end such experiments are organised.

In the face of growing concerns that digital data technologies first and foremost serve to consolidate and amplify privatisation, surveillance, discrimination and exploitation enabled by platforms, the disability activist slogan "nothing about us without us"<sup>38</sup> takes on a new and different resonance. Digital data technologies require participation if they are to be implemented responsibly. More than that, they open up the very methods and distribution of roles in how we represent and intervene in what the city is and who and what it is for.

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[jonathangray.org/](http://jonathangray.org/)  
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[publicdatalab.org/](http://publicdatalab.org/)

*Noortje Marres is Associate Professor and Research Director in the Centre for Interdisciplinary Methodologies at the University of Warwick. Her recent books include Digital Sociology (Polity, 2017).*  
[noortjemarres.net/](http://noortjemarres.net/)  
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- <http://publicdatalab.org/>
- <http://saveourair.publicdatalab.org/>
- Eg. Citizen Sense [<https://citizensense.net/>], Making Sense [<http://making-sense.eu/>] and the "Bristol Approach" [<http://kwmc.org.uk/projects/bristolapproach/>]
- <http://yellowdust.intheair.es/>
- <http://www.datawalking.org/>
- [https://en.wikipedia.org/wiki/Nothing\\_About\\_Us\\_Without\\_Us](https://en.wikipedia.org/wiki/Nothing_About_Us_Without_Us)

# Housing innovation in London

Victoria Pinoncely, Research Manager, Centre for London

It is generally agreed that the UK's housebuilding sector has been very slow to innovate.

We still build homes using labour-intensive technologies of bricks and mortar, while innovation in other sectors has been characterised by rapid and radical change. But with demand for new housing high, and supply low, traditional housebuilders have had little reason to do things differently while barriers to entry remain high: you can't come up with a clever app to revolutionise housebuilding or do away with land, construction and planning challenges.

As these ideas from around the world show, innovation is needed across the housing cycle – from access to land through new models of co-living to better engagement with communities. Moreover, these types of innovation need to be actively recognised and supported.

New research by Centre for London is looking at how innovations in housing construction and manufacturing could deliver housing at speed, quality and quantity in the capital. Too often, non-traditional construction

techniques conjure visions of prefabricated concrete towers, containers or US-style mobile homes. But attitudes are different in other countries: in Sweden, 84 per cent of detached homes are prefabricated. As the UK's housing crisis deepens and as the supply of new homes fails to respond to demand, architects, engineers and investors have been working together on a new generation of manufactured homes. These are built offsite using precision manufacturing techniques and are assembled onsite in a matter of months, if not weeks.

This innovation has been driven by constraints such as the shortage, and cost, of traditional contractors. Pocket, a developer specialising in micro-homes, embraced modular construction a few years ago to bring down costs; in May they completed Europe's tallest residential modular tower in Wandsworth. Each flat was built and fitted offsite, then craned into place at the rate of one storey per day. Earlier this year, across the Channel in Nantes, the Yhnova house was 3D-printed in a matter of days – a world first.

Innovation as it is usually defined – the application of ideas in practice to meet the needs of society or the

market – remains on the margins in housing. At the moment, only seven per cent of all construction output in the UK is done offsite. At a time when London is facing construction workforce and affordability challenges, housing innovation will be necessary to build the homes the city needs. The Mayor's Innovation Fund has recognised this by offering support for community-led housing, for the development of offsite and precision manufacturing of homes, and for new ideas to house homeless people; but there is a long way to go to promote innovation across the industry and scale it up.

A London Housing Expo – an idea put forward by design studio HTA – could showcase the many ideas and experiments bubbling up in London and abroad, as well as drive their application in the city. Like the Great Exhibition, which Sharon Ament hails later on in this magazine, these inventions could bring a sense of excitement, garner public interest, and create more innovation in the process: Crystal Palace, which hosted the exhibition, was the world's first large-scale prefabricated building.

## United Kingdom Digital disrupting construction

The making of a building involves a string of experts who often have conflicting interests and priorities. This often means that buildings have to be designed from scratch, several times over. But now a new initiative from Wikihouse – a non-profit open technology foundation – is trying to change that. By automating and standardising knowledge about design solutions, Buildx generates live data to calculate the cost, performance and environmental impact of a house. With one tap, ready-to-manufacture files can be sent directly to a factory.  
[wikihouse.cc](http://wikihouse.cc)

## Milan 3D-printed homes

The construction sector – like all parts of our economy – is undergoing a period of rapid change. In London, around half of construction jobs face the potential to be automated within 10-20 years. One possible transformation was unveiled this year in Milan: 3D Housing 05 is a prototype house constructed using a concrete 3D printer. Created by CyBe Construction, it marks a milestone for 3D printing in construction. The machine will set you back €349,000, so its potential could be limited to big budgets – for now.  
[3dhousing05.com](http://3dhousing05.com)

## Paris Policy which prescribes mixed communities

Should the law encourage mixed communities? Since 2000, French government policy prescribes housing mix. Each of the 131 municipalities of Grand Paris must ensure that at least a quarter of housing stock is social and intermediate housing – or face a fine. This has encouraged the City of Paris to grow social housing stock from 13 per cent to 20 per cent in the last two decades.

# Ideas from around the world

We take a look at housing solutions from around the world – some old, some new – and find out how recent innovations in London compare.

## Denmark Co-housing for families

Co-housing is making a comeback. London is experimenting with schemes for young workers – like Collective Old Oak – but the options for families are limited. Elsewhere, the model is thriving. Take Lange Eng, Denmark's largest co-housing community. Over 200 parents and children live in 50 homes, connected by a community house, a weekly cooking rota, and play areas. Setting aside the challenges of funding and building, co-housing could bring huge benefits to families in London: shared childcare, cooking, and onsite nurseries could save them a great deal of time and money.  
[langeeng.dk](http://langeeng.dk)

## Hong Kong Building over stations

Hong Kong's mass transit railway is one of the world's few profitable transport systems. That's because its operating model is one of "rail + property", based on very high-density development around built 100,000 homes and more than two million square metres of commercial space using this approach. The revenues generated help to keep fares low – less than \$1.00 in 2014 – and even return a dividend to the Hong Kong government as the system's majority shareholder. Could London replicate this model? We think so. Check out our 2017 report, *Ideas above your station: Exploring the potential for development at London's Stations*.

## Australia Virtual reality: bringing community engagement into the 21st century?

Virtual Reality (VR) is no longer just for video-game-loving teens. The technology is now being adopted by the construction industry to improve design, safety and training. In Australia, one developer went so far as to produce Google Cardboard Goggles and distribute them to the development's community. The VR gave people the opportunity to experience the space, and was also used alongside more traditional engagement tools.

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# Interview with an innovator: Wayfindr

*Geraldine Bedell* talks to *Umesh Pandya*,  
the designer behind Wayfindr, which helps blind people  
navigate transport networks and other indoor spaces.



© Umesh Pandya

### ***What is the ambition for Wayfindr?***

I'd like a vision-impaired person to wake up in London knowing that by the afternoon they can get to a meeting in New York independently – and that the journey will be seamless. It can be very difficult for blind and partially sighted people to get about, and especially to navigate transport systems.

### ***How did Wayfindr start?***

I was working for digital product studio ustwo, where I created a programme of work called Invent Time which allowed our design and development teams to address social issues using new and emerging technologies. After reading the RSBC's (Royal Society for Blind Children) Youth Manifesto, I ran a workshop with their Youth Forum. It was immediately clear that getting around the city was a huge issue – and navigating transport networks was especially challenging. We wanted to look at using emerging technologies to help.

### ***How did you come up with a product?***

We made journeys across London's transport network to simulate limited sight – I went back and forth to

work in simulation goggles – and that led to rapid prototyping and a testing of potential solutions. We had a pilot trial at Pimlico Tube station.

### ***Was the trial a success?***

Yes, but we quickly realised the problem couldn't be solved simply by a nice little app. The more we explored navigation apps for vision-impaired people, the more it became clear that this wasn't a small problem: what was needed was a consistent standard that could be implemented across all digital wayfinding systems. We had to pivot.

Indoor navigation is coming. One estimate is that it will be a \$21bn market globally by 2020/2021 and worth \$1bn in Britain. We turned our attention to creating the first open standard for audio-based wayfinding. After the trial at Pimlico, we were invited to pitch to Google.org's Global Impact Challenge, and we were subsequently awarded a \$1m grant. London Underground then commissioned a full-scale trial at Euston using an app that interacts with beacons in the station, allowing us to test and refine the open standards for audio navigation.

**How do you go about setting a new global standard?**

We lodged our standard with the International Telecommunications Union (ITU), the UN body for information and communications technologies, which has adopted it as ITU-T F921. We have since had trials on the transport network in Sydney and in a mall in Barcelona, and we're constantly refining and updating our standard using what we've learned. We've kept everything open source. We realised that if wayfinding was going to work properly for blind and visually impaired people, it had to involve not only charities representing end users, but also manufacturers of hardware and software, infrastructure developers, app developers, universities, other research bodies, and owners of venues.

**So who is your customer?**

Wayfindr's customer is no longer the end user, but all those organisations involved in providing indoor navigation technology. Our aim is to make sure that those technologies – which are undoubtedly coming – are inclusive for everyone. We are currently spending time talking to influencers and policymakers across different organisations working on enabling all citizens to move through their city.

**What is the ambition now?**

The technology for indoor navigation – whether it uses Bluetooth or the next big thing – isn't really in place yet, and it's not our focus to develop this technology. But too often accessibility is an afterthought. Our aim is to make sure that from hereon in, the Wayfindr standard is baked in at the start of any public or private indoor navigation infrastructure project, as well as improving legacy systems.

**How do you go about that?**

In November 2017, the Big Lottery Fund supported Wayfindr with a £300k grant to support development of the Wayfindr Open Standard and to raise awareness of indoor audio wayfinding across the UK. Wayfindr has created the Wayfindr Community, a collection of organisations interested in developing accessible audio navigation solutions, to ensure that the Open Standard is used across the indoor navigation industry. All this has the potential to revolutionise the lives of blind people – removing barriers to employment, to meeting friends and family, and to being fully involved in their communities.

**What about you personally?**

I became CEO of Wayfindr in 2015 but stepped down last year, though I remain an advisor. I now work with charities, NGOs and social enterprises to create digital products and services.

[wayfindr.net](http://wayfindr.net)



©Wayfindr

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All this has the potential to revolutionise the lives of blind people, removing barriers to employment, to meeting friends and family, and to being fully involved in their communities.

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**City diversity is the creation of incredible numbers of different people and different private organizations, with vastly differing ideas and purposes, planning and contriving outside the formal framework of public action.**

”

Jane Jacobs, *The Death and Life of Great American Cities*, 1961

## Why artificial intelligence must take on crimefighting

The modern world is in many ways in a constant state of flux, a phenomenon largely driven by technological innovations. Policing and crime are no different: indeed, one of the biggest criminal justice trends to emerge over recent years is the transition of criminality from the streets to the digital realm.<sup>1</sup> Even street gangs are now using social media to incite and organise violence.

In 2016/17 there were over 55,000 online crimes committed, up 20,000 compared to the previous year<sup>2</sup> – a huge increase of 57%. Fraud, now largely digital, is estimated to cost the UK economy £190bn every year.<sup>3</sup> Police resources are often stretched, and it's clear that the police need to innovate and develop new counter-criminal technologies. But if technology creates new problems for law enforcement, the good news is that it can also provide new solutions.

Artificial Intelligence (AI) is emerging as a principal response to the changing nature of crime prevention. AI can be defined as the theory and development of computer systems to perform tasks normally requiring human intelligence, such as visual perception, speech

recognition, decision-making, and translation between languages. AI systems replicate human functions, except that they operate at much faster speeds.

One possible application is for the police to use AI to cross-reference all their crime data in order to find geographical or behavioural patterns. When a burglary is logged as a crime, for example, AI could check for patterns in other sets of information. It may be that when a proportion of these burglaries took place, Automatic Number Plate Recognition (ANPR) cameras detected the same vehicle in the vicinity and this vehicle was registered to a known burglar. Information like this would save police time and help to solve crime.

Human evidence gathering is sometimes flawed, particularly when it comes to large quantities of data. A number of high-profile rape cases have collapsed recently due to a lack of evidence disclosure. It's obvious how this can happen. Searching through tens of thousands of messages across multiple communication platforms is no easy task. Using

AI and machine learning could help our criminal justice system to overcome administrative barriers of this kind – so it is welcome news that the National Police Chiefs' Council (NPCC) is starting to consider this approach to evidence gathering.<sup>4</sup> As Chief Constable Sara Thornton, the Chair of the NPCC, has said: "If technology is the challenge, it's also got to be part of the solution. So with the CPS we have set up a group to explore the clever tech that could help us – whether machine learning or artificial intelligence."

The police need to avoid implementing AI piecemeal, however. Innovative technologies must be integrated into every aspect of policing and implemented in an ethical manner that recognises the potential dangers posed to personal liberties from Big Data. The Metropolitan Police, as the UK's largest and wealthiest force, needs to take the lead here and showcase what can be done. It should establish an implementation group that consists of police officers, AI programmers and experts in police data as soon as possible to ensure that the Met is sufficiently future-proofed.

Introducing AI into policing alongside other new technologies will help solve many of the new and emerging problems encountered by the police. It will give police forces the ability to monitor new areas of crime, such as social media. It will also help them to stay ahead of criminals that wish to exploit emerging technologies. Embracing technology and innovation in an ethical fashion could deliver a police service fit and ready for the 21st century. Elected politicians should get fully behind such initiatives as a matter of urgency.

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# Three ideas for London

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Above: Attendees at our first *London ideas* event, May 2018

In May, 70 urbanists joined Centre for London at the first *London ideas* evening. Five innovators stood in front of the crowd to put forward their ideas for the city, setting out the challenge, their idea and the potential impact it could have. From tackling pollution in the Thames, to making use of disused spaces through urban farming, the ideas addressed some of London's critical challenges. Here we ask three of the innovators to explain their ideas again.



London ideas event, Covent Garden, May 2018



## A new way to fund housing

Arya Taware, Founder & MD, FutureBricks

### The problem

We aren't building enough homes. The government believes that 300,000 dwellings must be delivered every year to meet the housing needs of the country's growing population – but according to official figures,<sup>1</sup> only 217,000 new homes were built in 2016-17. While this was an improvement on the numbers for the previous year, it is clearly difficult for many people to get on the property ladder. In February 2017, the government published a white paper, "*Fixing our broken housing market*"<sup>2</sup> which includes a plan for building homes at a faster rate and diversifying the housing market.

This white paper highlights the decline of activity among small builders following the recession. Small builders registered only 18,000 new homes in 2015, down from 44,000 in 2007. This is important because these small to medium-sized builders (SMEs) provide affordable housing, which is what many first-time buyers want.

SMEs have struggled to access development finance, particularly since the 2008 banking crisis. The obstacles include stricter regulations, a poor economic climate, and little attention from the government. Many have struggled to stay afloat.

But the UK needs smaller builders if we are to build more affordable residential properties.

### The idea

My idea is a peer-to-peer-lending platform offering alternative finance to small and medium-sized house builders. It also opens up property investment – currently an exclusive activity accessible only to those with significant capital and the right connections – to a much wider pool of investors. Through the FutureBricks platform, anyone can invest as little as £1000 in property development projects for secured returns of up to 12% per annum (capital at risk). At FutureBricks, our mission is to democratise investments in property and, at the same time, help solve the UK's housing crisis.

Our user-friendly platform (it takes less than 3 minutes to register) has all the information on builders and projects that lenders need to make an investment decision – including an investment summary, build cost, developer profit and other key details. Prospective lenders can even book a site visit to get a feel for the project in which they are thinking of investing. After a decade of record low interest rates, investors now have an opportunity to earn high

rates of interest and help solve the nation's housing crisis in the process.

### The potential

FutureBricks can enable financing for the kind of housing projects that our country needs. In addition, our vision is to enable a financially self-sustaining housebuilding economy, reducing the need to depend on larger institutions for funding. We will also be tracing the socioeconomic impacts of these property investments on local communities. A social impact feature will allow lenders to track the creation of jobs, as well as the number of trees planted and the amount of materials recycled – allowing them to watch not only the accrual of interest, but also the social impact of their investments via a personalised dashboard.

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## An inter-city exchange programme for schools

Mario Washington - *Ihieme*, Research Assistant, Centre for London

### The problem

There is a perception that there are significant differences between London and the rest of the UK. Research at Centre for London earlier this year revealed that a large proportion of Londoners strongly identify with the city, but do not feel particularly British or English. Census statistics have similarly pointed to a lack of British identity in UK cities. This lack of national connectedness is not helped by the fact that there are few opportunities for people from one region to engage with those from another, and this is particularly so for Londoners. Young people living in cities are unlikely to cross paths with those living in adjacent areas, let alone with those living further afield – leading to an “us versus them” dynamic.

### The idea

My idea is to create a 3-month nationwide inter-city school

exchange programme for pupils aged 14-16. The scheme, similar to existing French or Spanish school exchange programmes, would see schools in London form partnerships with schools in cities and towns across the UK. Pupils would be offered the opportunity to study elsewhere as part of the curriculum, and pupils from the host school to study in London. Pupils would stay with a local family, and relationships between pupils would be created a year prior to the programme beginning, with school partnerships fostered through arrangements that enable relationship building between education institutions and local authorities.

### The potential

By taking part in this programme, young people from across the country would have the opportunity to learn in a different environment, meet peers from outside their

own community and experience different cultures within the UK. It could help pupils to develop their inter-personal and soft skills. More than this, giving young people the opportunity to travel to a new part of the country could help them to develop a deeper understanding of what it can mean to be British. An inter-city exchange programme could contribute to a renewed sense of national identity: the different circumstances and attitudes that young people encountered would encourage them to reflect on their own experiences and how these shape their feelings about belonging. All in all, this scheme could encourage a feeling of togetherness and belonging among the younger generation, encouraging them to build new friendships across the country, which could last a lifetime.





## Celebrating London's Gaybourhoods

Simon Brooksbank, Co-chair & Co-Founder, Planning Out

### The problem

First of all, it is necessary to be clear what a “gaybourhood” is – a geographical area with recognised boundaries frequented by large numbers of people who identify as Lesbian, Gay, Bisexual and Transgender (LGBT). Gaybourhoods often feature a higher concentration of LGBT businesses, venues, community facilities or cultural attractions.

Even though we live in a society that is much more accepting of homosexuality than it used to be, gaybourhoods have faced significant challenges in recent years. Many have lost a significant proportion of their LGBT venues. A study by UCL Laboratory, published in 2017, found that in the past 10 years 58% of LGBT venues in London have closed.<sup>1</sup> The reasons are complex but, as society changes, gaybourhoods should remain an important part of the social framework of our cities, providing spaces where LGBT people can meet and be themselves, and where LGBT culture is celebrated.

### The idea

Exploring ways to keep LGBT venues from closing is an important

aspect of protecting gaybourhoods. Another is through placemaking, using imaginative street art and furniture to create a sense of place and identity. This has already happened in West End areas like Chinatown and Theatreland, where the urban form has been modified to celebrate and protect the respective Chinese and theatrical aspects of urban spaces.

Soho is the most famous gaybourhood in London; and Old Compton Street, with its many LGBT venues, is widely recognised as its centre. Unlike nearby Chinatown and Theatreland – where street signs have been modified to make people aware of these distinct places – Old Compton Street is devoid of street art or furniture celebrating its culture and heritage. Indeed, such is the extent of the closure of LGBT venues and the lack of distinguishing street furniture in Old Compton Street that you could almost be forgiven for not realising that you are walking through a gaybourhood at all. So, my idea is to use street and street furniture to celebrate the area's cultural heritage.

### The potential

In cities such as New York, San Francisco and Chicago,

gaybourhoods have been protected and celebrated through street art and street furniture. From rainbow-coloured zebra crossings to the use of rainbow flags and statues, these innovations have given their districts a distinctive feel. Any street art in Soho would have to be sensitive to the surrounding area and involve good design, but a similar approach is certainly possible.

Elsewhere in the world, successful placemaking has made gaybourhoods tourist destinations in their own right, thus helping the local economy. In London, such a move could draw extra business to LGBT venues, further protecting the character of this aspect of Soho.

The LGBT influence on Soho is an intrinsic part of what makes it one of the most special and vibrant neighbourhoods in London. Imaginative and distinctive urban design would not only protect the LGBT character of Soho, but also celebrate it.

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London ideas event, Covent Garden, May 2018

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**Ideas rise in crowds, as Poincaré said. They rise in liquid networks where connection is valued more than protection.**

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Steven Johnson, *Where Good Ideas Come From*, 2010

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# The sensory city philosopher: Carlo Ratti

CityLab's *Laura Bliss* heads over to Cambridge Massachusetts to meet *Carlo Ratti*, an Italian engineer, architect, educator, and inventor to see what new innovations his team are cooking up.



©Daniele Ratti

If you ever have two hours to kill in Cambridge, Massachusetts, skip the museums and take a seat looking onto the sidewalk. Listen for laughter and plans being hatched; watch for lots of texting and Google Maps-orienting. At least that's what Carlo Ratti recommends. "It's like you do in Paris," he said. "Just observe the life unfolding before you" — online and in real life.

People-watching may have been a slightly wistful tip. On a daffodil afternoon made more spectacular by an earlier forecast of rain, Ratti was stuck inside a glass-walled conference room at MIT's Department of Urban Studies and Planning, taking team meetings, client phone calls, and media interviews.

Then again, this was the Senseable City Lab, the MIT think tank where Ratti, an Italian engineer, architect, educator, and inventor, is the director. It's where some of the world's sharpest minds come to observe and tinker with 21st-century cities.

Composed of six investigators and dozens of researchers, the lab studies human interactions within urban spaces, and how digital information and interfaces can shape and illuminate them. Ratti and his team work across a range of subjects — trees, sewage, bikes, and on-demand vehicles — while also publishing papers, testing robots and artificial intelligence, and occasionally spinning off its work into startups and business ideas. Ratti also leads the Carlo Ratti Associati, an international design and innovation firm whose real-world projects play with interaction via sensors and data.

If there's a thread that links this all together, it is Ratti's fascination with, and optimism about, the dynamism of urban life in an ever more connected era. "The digital and physical worlds are converging," Ratti told me. "What interests me is: how do we use all of this potential to create new kinds of dynamics?" It's people-watching, plus.

Through his research, innovation, and writing, Ratti evangelises the concept of a "real-time city", where physical and social networks are in constant interplay, knitted together by a layer of digital sensors. In Ratti's future metropolis, streets, buildings, and objects sense and respond to the movements of the smartphone-equipped masses using powerful algorithms. But while other "smart city" acolytes preach the social-engineering capabilities of such technologies, Ratti's is a more playful approach: make tweaks, and let them ripple.

Just before our interview, Ratti had met with fellow Lab members to review their progress on the Roboat, one of their latest endeavours. Later this summer, in a collaboration with technologists in Amsterdam, they'll deploy prototypes of the world's first fleet of autonomous boats. These would not only transport goods and people on Amsterdam's canals sans captain, but also gather remote environmental data and reassemble into bridges on command, Transformers-style. A model roughly the size of a large suitcase sat on the opposite wall, all translucent plastic and glittering motherboards.

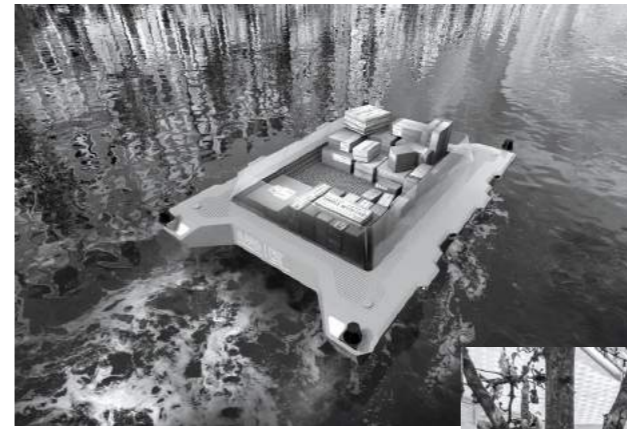
Roboat is a typical Lab project in a couple of ways — first, in that it is another entry into the "Internet of Things", those blinking, scanning, WiFi-connected objects that increasingly blanket our homes, cars, and public spaces. And second, the Roboat isn't designed to solve anything, per se. It's more like a proposal, with lots of different use cases.

The same goes for another recent and high-profile Lab project, "Underworlds", which sent robotic waste-samplers into the sewers of Cambridge. The probes (one fat, one short, nicknamed Mario and Luigi for their pipe-hopping personalities) scanned sewage samples in near real-time, which MIT microbiologists examined for signs of viruses and substance abuse. With that, they built a city-wide health map<sup>1</sup> that public health officials could tap into. The proof of concept conducted in Cambridge was so successful that the project spun off into Biobot, a startup partnering with cities around the US to hunt for traces of opioid abuse using similar sewage-mucking robots.

Biobot is now publicized as an innovative, tech-based response<sup>2</sup> to a pressing public health crisis. But when it started, Ratti told me, it was more open-ended. "It wasn't supposed to solve anything. It was more like, what we can discover?" he said. "And actually, it turns out there is a lot of valuable information in sewage."

“**If you have data and you sense what's going on, you can make a change, and the system responds. That's a true smart city.**”

For Ratti, urban design isn't about directly addressing problems. The way he sees it, cities just don't work that way. He sees architecture and civic innovation as parts of a city's larger social and infrastructural webbing. Whether it's a high-rise, a vehicle, or a boat-based probe, introducing new objects into the urban landscape can cause network-wide shifts that designers can't



Courtesy of Carlo Ratti

**Left:** Roboat. A fleet of autonomous boats in Amsterdam's canals, monitoring the environment, providing transportation and enabling self-assembling bridges and other urban infrastructures.

**Below:** Living Nature. "La Natura dell'Abitare", a garden pavilion where all four seasons coexist with each other at the same time.



Courtesy of Carlo Ratti

always foresee. Design, therefore, should not seek to control. Instead, it should tap into the natural human flows you might witness from the nearest city square or riverbank.

That's a distinction between Ratti's work and many other "smart city" projects you hear about, which tend to use technology as a "solution" — or sometimes, more darkly, as a means of control. The ability to gather data at a massive scale to observe, predict, and connect people has transformed the urban landscape, thanks in particular to the sensing, data-gathering, and analytical powers of IBM, Cisco, Google, and other IT giants. Witness the telephone poles kitted out with pollution detectors and gunshot noise scanners; Wi-Fi kiosks designed to spread Internet access and city services; housing and social welfare policies

crafted on data-driven maps and predictive algorithms. But in Ratti's mind, when sensing technology is deployed for a top-down purpose, it closes off the chance for people to meaningfully engage with their surroundings. "You wind up lacking feedback loops," Ratti said. "If you have data and you sense what's going on, you can make a change, and the system responds...that's a true smart city."

After gathering civil engineering degrees in both Paris and Turin, Ratti earned his PhD in architecture from the University of Cambridge. A Fulbright scholarship brought him to MIT in 2001, where he has more or less stayed ever since. On the day we met, Ratti was dressed the part of perpetual grad student: wire-rimmed glasses, slightly mussed hair, jeans frayed at the bottom by thin-soled, low-top

tennis shoes. He bristles at any one label to describe his work. "It's sort of like the guy says in the film by Truffaut, *Jules et Jim*: be curieux aux profession — curious by profession," he told me.

It's his horizontal, participatory vision of the future of cities — not to mention his glitzy, media-friendly projects — that have made Ratti influential as an urban innovator and theorist. Over the past ten years, his work has landed him on "best and brightest" lists from *Fast Company*, *Wired*, *Esquire*, *Forbes*, and numerous architectural magazines. He has delivered multiple TED talks, and has authored more than 500 scientific publications. Recent books, including *Open-Source Architecture* and *The City of Tomorrow: Sensors, Networks, Hackers, and the Future of Urban Life*, are manifestos that call for

and lay out a vision of how digital interfaces can make cities more open, engaging, and democratic places to live. The latter book imagines the metropolis of the coming centuries as fully sensory and responsive, with digital and physical networks and interfaces “overlapping with, and including, its inhabitants,” wrote the critic and scholar of visual culture Richard J. Williams in his review<sup>3</sup> of the book.

The work of Carlo Ratti Associati speaks to that future: for design expos around the world, the group has built a climate-controlled “garden pavilion” in which all four seasons can be experienced, a “supermarket of the future” where products come digitally labelled, and a gazebo with motion-detecting cascades of water for walls. A yet-unbuilt project is a proposal for the future of Italian highways, featuring a network of

telephone poles outfitted with nesting drones<sup>4</sup> that communicate with driverless vehicles. Another project, Scribit<sup>5</sup> aims to manufacture a drone capable of drawing any pre-programmed design, pattern, or image onto wall surfaces. What excites him most about these works, Ratti told me, is that he often gets a chance to see how the public will react.

Already, smartphones, connected vehicles, and “smart” energy systems churn out an unprecedented amount of data about how we live, move, and consume resources; Ratti foresees a future where that data is open and accessible to all, so that all may participate in building “smarter” cities. He dispenses with the notion that one planner or architect could possibly hold the answer to a more efficient, liveable environment – the “great man”<sup>6</sup> theory of 19th

and 20th century urban planning. “People would come up a solution, and they thought it was just going to be implemented and that was that,” Ratti told me. Block by block, byte by byte, digital networks can restore urbanism to its more iterative roots, where residents help build the cities they live in, he believes.

At least, in theory. In old interviews from the early 2010s, Ratti praised the Obama campaign’s savvy use of Facebook and Twitter to engage and energise voters. Now, in the era of Trump, in the wake of the Cambridge Analytica Facebook data scandal, I asked him if widespread access to big data across social networks doesn’t look a little more nefarious. He responded that both can be true: that the same technology, and the same types of data, can be used to have opposite results – empowerment or manipulation. “The difference

is our response in society – policies, taxation, and so on – and how we make sure we end up on one side or another,” Ratti said. “We have to be vigilant.” Not just regulators, he added, but the citizens themselves. The new data privacy standards introduced this month in the EU should bring a stronger measure of egalitarianism to data control, he said.

Nonetheless, in the present American context, it feels simplistic to expect that “citizens” will organise themselves around technology to build a more desirable social order. Political polarisation is increasing, as is economic segregation and inequality, gaping issues that Ratti’s research is not designed to address. “I don’t think that the answer lies in any of the smart devices or computers or networks we currently have,” said Michael Batty, Emeritus Professor of Planning at University College London’s Centre for Advanced Spatial Analysis. “The issues are behavioural not technological; they involve social networks primarily. This is not the major preoccupation of Carlo’s group.” And since the Senseable City Lab mostly develops one-off projects and research questions, it’s hard to point to long-term, lasting results or evolutions in human/urban interactions. Ratti likes to talk about the civic engagement implications of his work, but he becomes a little less convincing when he does. Writing about the book *Open Source Architecture*, Flora Samuel, currently Professor of Architecture and the Built Environment at the University of Reading, took issue with Ratti and his co-author Matthew Claudel’s lack of detail about how the world might, for example, scale up the concept of a “WikiHouse” – i.e. blueprints for a reproducible structure that anyone can “edit” and build, accessible to all tiers of society. “How this is to be

achieved without a private income I do not know,” she wrote.<sup>7</sup>

Yet Ratti insists that the gaps are closing, not widening, for people trying to access these digital interfaces. He told me how, when he first came to MIT in the early 2000s, some of the older professors were ruffled by his use of cell-phone data to study urban activity. “Some of them said: ‘Not everyone has a cellphone, so why don’t you do something that tries to close that divide instead?’” he recalled. Soon, there will be more cellphones than humans on the planet.<sup>8</sup>



**I like to see our work as something that contributes to the production of mutations, accelerating the transformation of the present into how it ‘ought to be’.**



It’s the long-term impacts that count, Ratti told me. “I like to see our work as something that contributes to the production of mutations, accelerating the transformation of the present into how it ‘ought to be,’” he told me later via email. “You could say that designers are like the mutagens,” he said, using the term for the agents that cause mutations in DNA, evolving life over time. There is no one finite outcome.

If he had to do it all over again, Ratti told me he’d go into biology, to study how the convergence of technology will shape human life at the cellular level. As it is, he views cities as akin to living, breathing, circulating organisms – even and especially as computers are integrated into them. He harkened back to Mesopotamia, some 8,000

years ago, where archaeologists peg the first emergence of urban life. “Even then, cities emerged to bring us together, to allow us to exchange goods, ideas, and chromosomes,” he said. That’s the magic of the city. To Ratti the optimist, the machines of the digital era – big data, remote sensing, artificial intelligence – are beginning to unlock its codes.

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Below: The Supermarket of the Future



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Courtesy of Carlo Ratti

Living Nature. "La Natura dell'Abitare", a garden pavilion where all four seasons coexist with each other at the same time.

“

**The roots of great innovation are never just in the technology itself. They are always in the wider historical context. They require new ways of seeing.**

”

David Brooks, in a 2011 *New York Times* column, "Where Are The Jobs?"

## The best idea London ever had

We ask a leading Londoner to reflect on London's history and tell us about the best idea they think the city ever had.

For something so fantastical and ephemeral, the Great Exhibition of 1851 has left a remarkable national legacy, both intellectual and physical. The great museums of South Kensington were founded from its profits; a whole chunk of Sydenham was named after its building; it inspired a series of international world fairs; and it showcased the talents of great engineers and artists. It even had dinosaurs!

It seems we British like a good day out looking at amazing stuff. Other moments of extrovert

engineered by Joseph Paxton. The Exhibition, which ran for six months, was self-financing and highly profitable, and epitomised the energy and creativity of our greatest industrial age. It was international; it showcased the latest technologies, ideas, inventions, and artistic creations; it was spectacular and galvanising.

For me, the great beauty of the idea was the decision to invest the profits in establishing institutions that furthered its aims and principles, and which now line the aptly named Exhibition Road.

Exhibition as a vehicle for peace and internationalism, grounded as it was in the beliefs that free trade and economic competition could overcome nationalism and territorial ambition, and that science and technology could improve lives. I am certainly all for science, technology, and internationalism over territorial ambition.

The whole thing was rather egalitarian, with innovative demand-driven ticket pricing: it cost five shillings to visit on Saturdays, with a more popular

reminder of how much women's bodies were controlled.

The others are the dinosaurs, designed to the specifications of the then scientific theories of Sir Richard Owen. These reconstructions of prehistoric creatures now inhabit an island in Crystal Palace Park. Sir Richard's theory about the physiology of dinosaurs was wrong: his reconstructions remain a testament to the ever-changing process of science itself, in which hypothesis and theory is tested and changed over time with new evidence.

# The Great Exhibition

optimism have followed in the form of national gatherings that excite awe and wonder: the Festival of Britain 100 years later was a worthy successor, the Millennium Dome perhaps less so.

The 1851 Great Exhibition (proper title Great Exhibition of the Works of Industry of All Nations) developed out of discussions between Prince Albert, Consort of Queen Victoria, and members of The Royal Society of Arts. The designer and inventor Sir Henry Cole, who would become the first director of the V&A, was instrumental in bringing everything together with lightning speed and on a grand scale.

It took nine months to build the extraordinary Crystal Palace,

More than 12 million people visit the Science Museum, the Natural History Museum and the V&A every year, and the museums' international and scholastic output is phenomenal. Imperial College, the Royal College of Art and the Royal College of Music all became part of this nexus of institutions in South Kensington.

The body set up to distribute the profits along charitable lines still exists. The Royal Commission for the Exhibition of 1851, which aims to "increase the means of industrial education and extend the influence of science and art upon productive industry" still gives grants, operating out of Imperial College London.

A colleague of mine, Alex Werner, has written about the Great

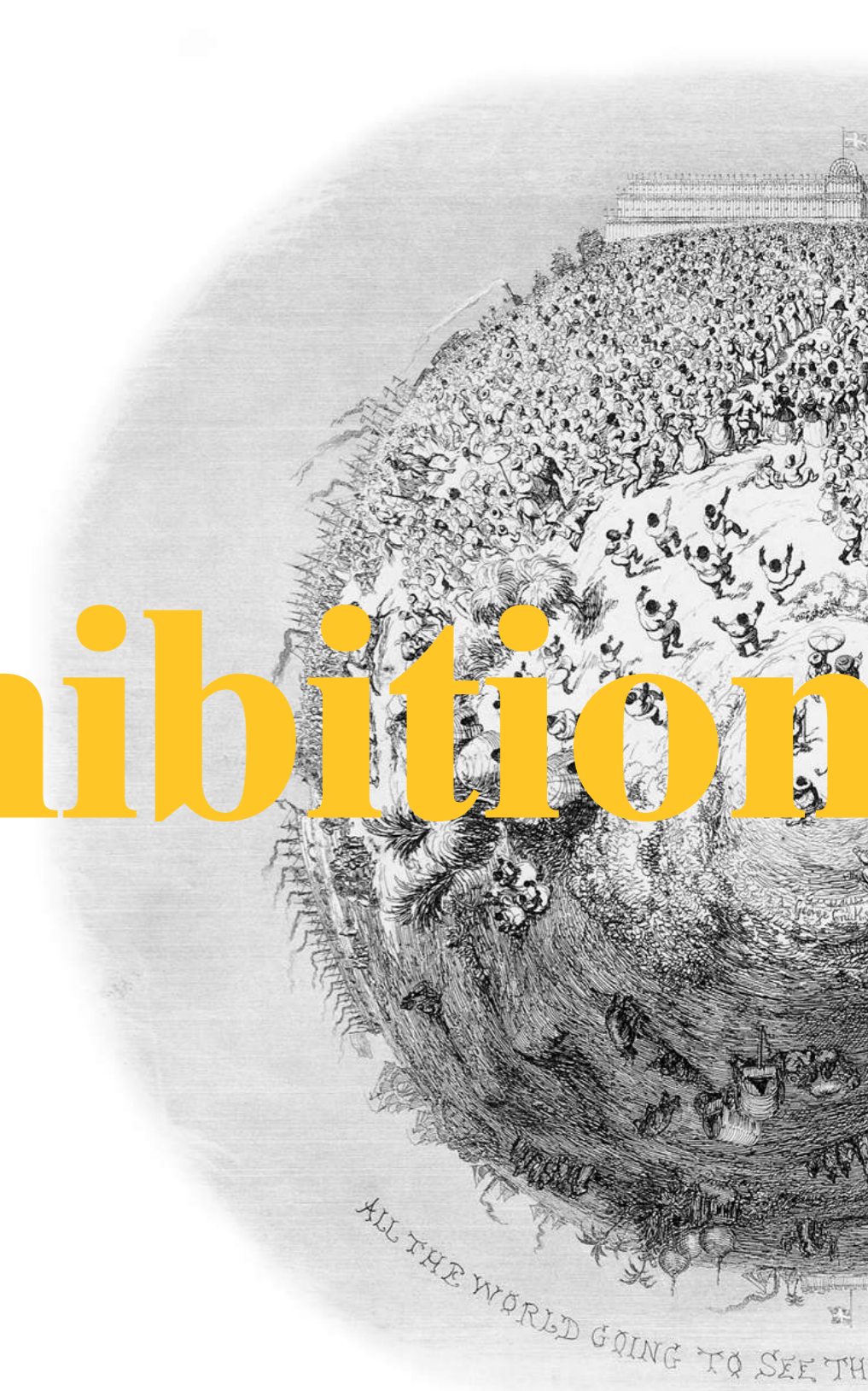
weekday shilling ticket. 6,039,722 people visited the Great Exhibition, a third of the entire population of Britain and nearly three times that of London. It was so successful that George Cruikshank lampooned it in a cartoon showing Manchester devoid of people, all of them presumably in London.

A huge array of objects was shown – and to this day, two particularly resonate with me. One is a technologically advanced corset made by Madame Roxey Ann Caplin, a staymaker of Berners Street, London – who, with her husband, invented and patented many improvements to corsets between 1838 and 1860. This is now in the collection of the Museum of London and is an extraordinary

This glorious group of life-size but wrongly configured creatures tantalises our imagination and embodies the fluidity of ideas.

Opposite the Albert Hall, the Albert Memorial shows the man himself, Prince Albert, with an Exhibition catalogue in his hand, its statistics enshrined in the stonework alongside him. Wandering back down Exhibition Road you can see the institutions founded to embody the Great Exhibition's ideals, as well as the many students, visitors and academics who visit them every day – making it, to my mind, London's greatest idea.

Sharon Ament, Director, Museum of London



Right: George Cruikshank's etching 'All the world going to see the Great Exhibition of 1851.'

© Museum of London



To make your idea actually happen, you need to make sure it's not only your idea. New initiatives are hardly ever achieved in isolation, so try to involve people who are as invested in the idea as you.

**Finn Williams,**  
CEO & Co-Founder,  
Public Practice

Find your motivation. Loads of people come up with ideas but few actually get made but if you find something you're passionate about solving, you'll work harder and faster.

**Scarlett Montanaro,** Co-founder, Crack + Cider

Just go for it! We had no idea what RevolYOUtion London would morph into. We went from a group of teenagers wanting to do positive things in our community to building an entire movement.

**Rasheeda Page-Muir,**  
Managing Director,  
RevolYOUtion

# Make it happen

We ask six innovators for their tips and words of wisdom they'd give someone who had an idea, but not a plan on making it a reality.

Love what you do, I know that sounds a bit cliché, but it's probably the only way you will be able to weather all the things people will throw in the way. If you can remain excited, you can generally handle the stress of it.

**Tessy Britton,** Director,  
Participatory City

You won't get up on the hard days to do something you're not bone passionate about, and there will be days when all you hear is no. Passion outlasts.

**Kate Glazebrook,** CEO & Co-Founder, Applied

Keep good records. Learn from the mistakes of others, it saves you the pain of having to make all the mistakes yourself. Go to courses. Attend networking events. Take up offers of help and most of all, commit.

**Cheryl Ndione,**  
Founder & CEO, Purple  
Moon Drama



## About London ideas

*London ideas* is a magazine about urban innovation by Centre for London and generously supported by Capital and Counties Properties PLC.

Published twice a year, it champions innovations that could transform London – and other cities around the world – for the better. Running alongside the magazine, Centre for London is holding a series of events at which entrepreneurs and innovators present and discuss their ideas.

**Find out more and to get involved:**

[centreforlondon.org/project/london-ideas/](http://centreforlondon.org/project/london-ideas/)

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