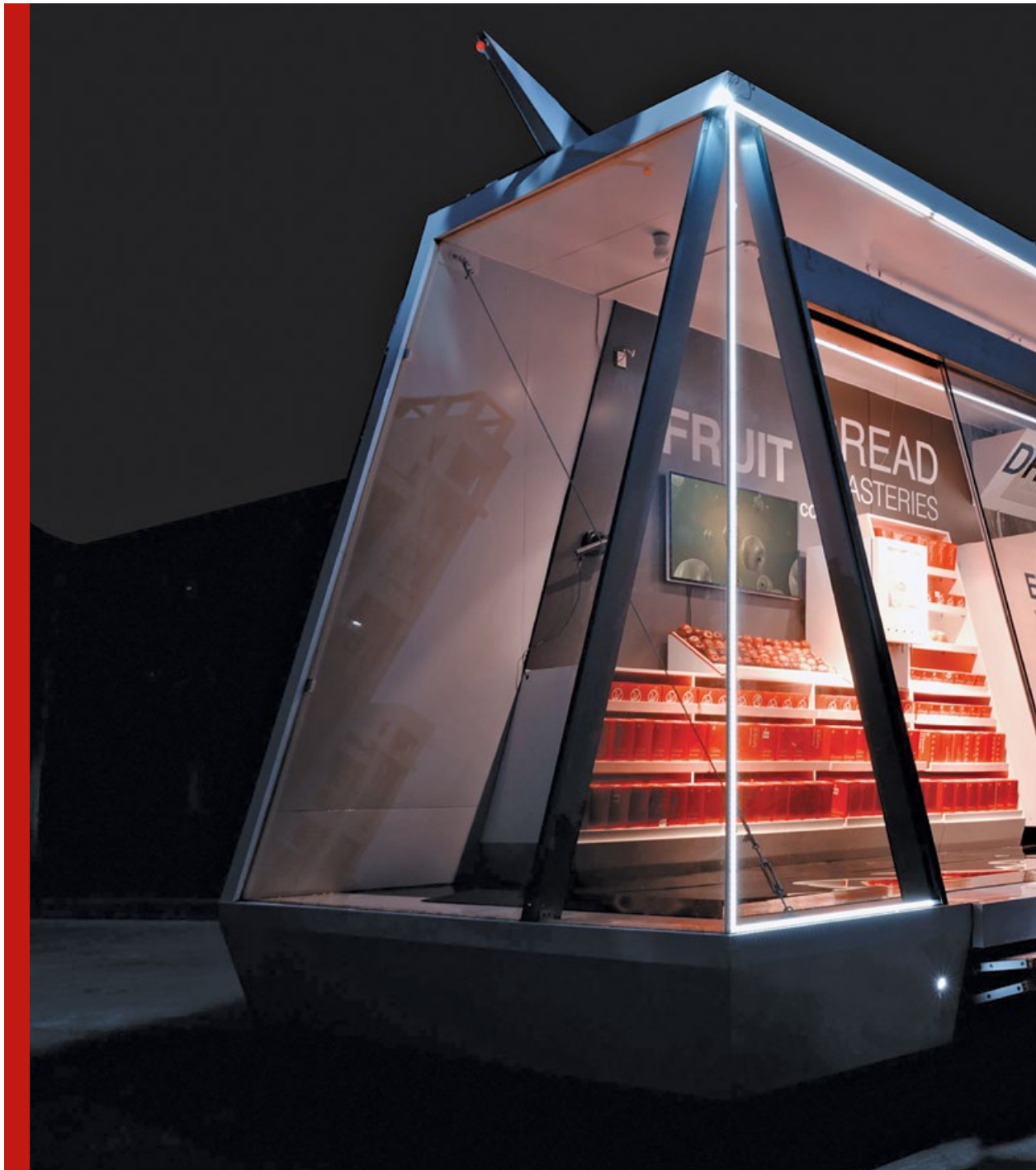# Disciplinary Hybrids

Clare Lyster

Retail Landscapes of the Post-Human City

What does the rise of automated retail mean for our future? Architect **Clare Lyster,** who is Associate Professor at the University of Illinois at Chicago, looks at its various emerging forms: cashierless grocery stores, low-cost solar-powered mobile retail units, self-driving food delivery vehicles, walls of QR codes in public places … Rather than signalling a dystopian future of diminishing human interaction, she sees them as being in the lineage of work by visionary architects and urbanists from the 1960s such as Yona Friedman and Cedric Price, with the potential to increase urban equitability and empower remote communities.

Wheelys Moby Mart mobile store, Shanghai, 2017

Night-time image of the beta version of the cashierless mobile store in Shanghai. This prototype for an automated mobile store can drive itself to where it is needed as well as to a warehouse to be restocked.

Over the last 150 years, the industrial spaces of capitalist production have been the location for advancements in automation, cultivating the cyborg-worker conundrum and furthering the promise of a post-human ecosystem. Today logistics marks the latest phase of industrial automation, where sophisticated software systems and digital infrastructure render production processes and delivery schedules beyond the competencies of humans. Take, for example, how algorithms, radio-frequency identification (RFID) technology and robots choreograph the way goods are ordered, received, picked and sorted in an Amazon fulfilment centre.

However, in tandem with advances in the industrial realm, the notion of a post-human society can also be witnessed in more everyday spaces as logistical technologies burst outside the walls of the factory to render automation an increasingly quotidian phenomenon. This is legible in the range of available gadgets that have entered the home (AI home assistants to smart devices) as well as new machine-retail environments that exemplify how and where post-human landscapes are entering the public spaces of the city.

Machine Landscapes of the Everyday

Amazon opened a prototype cashierless store known as Amazon Go in Seattle in late 2017. There are no assistants and no cashiers. Customers take products from shelves that are automatically charged to their Amazon account. It is not unlike taking something from the minibar in your hotel room and having the cost appear on your bill. But worry not, Amazon promises that if you put back the item it will disappear from your balance. A combination of deep learning algorithms, sensors and cameras in the ceiling control the selection, placement and replacement of all the goods, rendering obsolete the iconic barcode, the technology that first led to automatic digital inventories in the mid-1970s. With Amazon Go's system, named 'Just Walk Out', one simply picks up an item and then leaves the store.[1] Photos of the space depict a fairly typical (if not banal) interior layout, save the entrance, which is more akin to a subway station in that turnstiles prevent entry unless you successfully scan the details of your Amazon.com account from your smartphone. With such controlled access, and surveillance, there is no browsing or loitering here.[2] Welcome to the automated city.

Amazon Go, Seattle, 2017

The store in Seattle opened in 2017. This interior view shows the extent of sensors and information systems demanded for this type of retail.

If your phone is required to proceed deep into Amazon Go, you will need it to open the door of Moby Mart. As the name suggests, this is a mobile store that is part vehicle, part architectural space. It runs on electricity powered by solar panels and drives itself to a warehouse to restock. A drone landing platform on the roof allows merchandise to be delivered, while a hologram assistant greets customers.[3] Developed by the Swedish firm Wheelys (of Wheelys cafe-on-a-bike fame), the logic of Moby is to provide convenience, but the company also claims a political motive.[4] Moby, it is hoped, can compete with multinational corporations like Amazon, who can invest large sums of money in research and development to advance automated systems in the city (Amazon have numerous patents in the works, including a kiosk that enables one to automatically return items purchased online). According to its developers, Moby is cheap to build ($100,000) and very flexible, making it easier for laypeople to go into the retail industry. Furthermore, communities in remote locations could also purchase one to self-sustain themselves. It is currently being tested in Shanghai.

A virtual store in a train station in Seoul comprises images and codes of everyday products and groceries laminated on a wall. Installed by Tesco Homeplus in 2011, customers use their smartphones to capture QR codes of required items for home delivery.[5] By 2015, there were 22 stores in Korea.

Tesco's mobile device applications for Android, 2018

The Tesco supermarket application is used by customers for online purchases. In Seoul, South Korea, Tesco Homeplus customers use a similar app to order items from a virtual mural with images and corresponding QR codes of over 500 products.
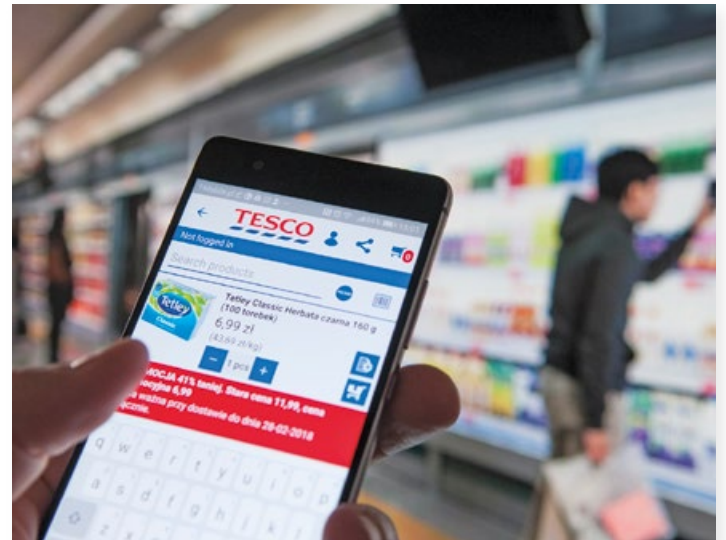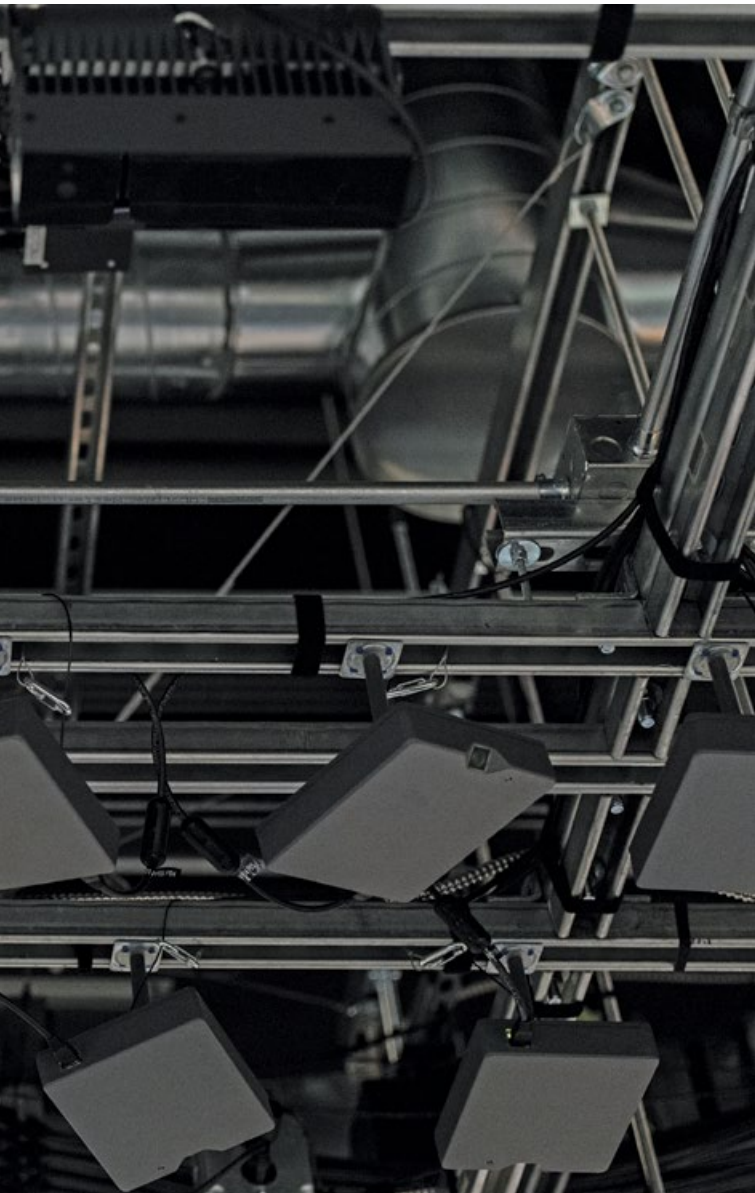
This is a mobile store that is part vehicle, part architectural space. It runs on electricity powered by solar panels and drives itself to a warehouse to restock.

Alibaba, the Chinese online retailer, is prototyping an automated car-vending facility for Ford. One facility opened in Guangdong in March 2018. Customers select an electric car online, and pick it up at the vending centre after having been identified by facial recognition technology courtesy of a selfie uploaded by the customer at the time of placing the order. The customer has three days to try out the car before deciding to keep or return it.[6] This is not unlike a facility implemented by the online auto retailer Carvana, who opened the first car vending machine in the US in 2013, in Atlanta. And in late 2016, Autobahn Motors, a car dealership in Singapore, opened a 15-floor car-vending machine that dispenses luxury vehicles. Presumably some people never know when they might want a Ferrari!

In addition, new forms of automatic distribution are being made possible by logistical couriers from Grubhub to Yodel, many of which are now testing robots for delivery.[7] DoorDash and Postmates are working with Starship Technologies to test the robotic delivery of food in business campuses in Silicon Valley. Characterised as a cooler on wheels, these little gizmos use AI technology to navigate (they even acknowledge traffic lights). Controlled by cameras and sensors and travelling at 4 miles (6.4 kilometres) per hour, they are designed to deliver goods locally in 15 to 30 minutes within a 2-mile (3.2-kilometre) radius. They can also be seen on the streets of cities in Germany and the Netherlands, where they are being tested by Domino's Pizza;[8] while Just Eat and logistics firm Hermes are conducting trials in London and Hamburg.[9] The sidewalk is now a machine landscape. Take care when walking the dog!

Moby and its bot siblings such as Robomart, a self-driving delivery vehicle stacked with food items – akin to a vending machine on wheels that comes to you on request[10] – promise to change how retail is conducted in the city, although they are not completely original prototypes. Mobile stores called Rolling Stores were familiar in the US from 1910,[11] and many readers may remember the milkman making deliveries in his truck. Vending machines have been around since the Roman city, when machines dispensed holy water, while a book-vending machine dubbed the 'Penguincubator' was invented by Allen Lane, the founder of publishers Penguin Books, in 1937. In fact, it is worth mentioning here other early network technologies crucial to automated retail systems in the contemporary era: the credit card (1958), the ATM machine (1966) and the barcode (1974) are especially significant, not to forget the mail-order catalogue industry in the US, which at the height of its agency in the early 20th century was a predecessor of online retail.

The Machine as Disciplinary Agent

For some, that the abstract technologies currently so well rehearsed in industrial facilities would seep into the everyday to restructure the physical environment is a dystopian prospect. Nonetheless, even if some narratives – especially those centred on how automated exchange might erase collective interaction – are well founded, other declarations for machine infrastructure in contemporary urban discourse can be identified.

Tallest car vending machine in Singapore, 2017

Autobahn Motors is a 15-storey vending machine that sells luxury cars. Customers complete their purchase online via an app and the car is delivered.
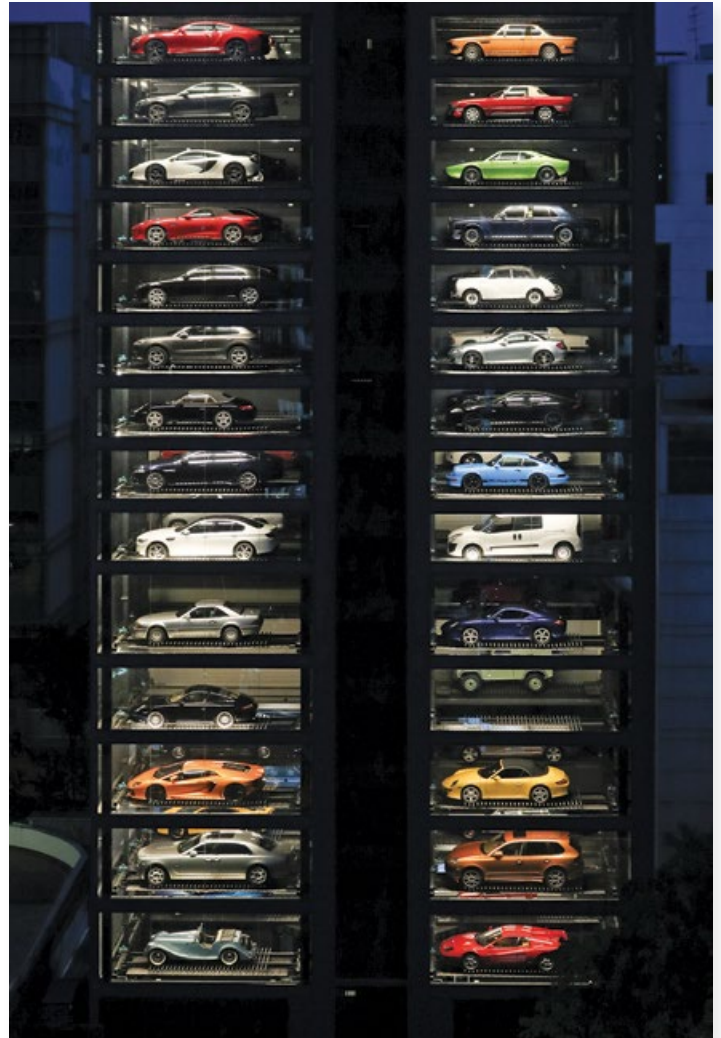
Starship Technologies self-driving robotic delivery vehicle, London, 2016

Parcels and groceries are delivered from stores or hubs within a 2-mile (3.2-kilometre) radius, on request via a mobile app. It takes 15 to 30 minutes for the shipment to arrive, and the robot's journey can be tracked by the customer.

In the 1960s, architects embraced computational technologies and electronic gizmos as necessary vehicles for architectural discourse. Some focused on cybernetic theory (feedback systems) to render space more customisable. The French architect Yona Friedman invented the flatwriter, a data interface (akin to a smart typewriter) that allowed house buyers to configure their own home within a large megastructural grid that he had proposed for Paris. Others deployed networked components to conceive urbanity as distributed fields in the logic that cities would benefit by a shift from large centralised power structures to small-scale, neighbourhood-based systems that were more flexible and contingent on local needs. Cedric Price's project titled *Atom* (1962) deployed radios, televisions, calculators and screens in combination with furniture, as well as architectural space, in the design of an alternative learning platform that would render education accessible to all, especially those neglected by traditional institutional settings.[12] In a similar fashion, the technology writer James Bridle argues that Allen Lane's real genius in conceiving the Penguincubator was 'to take the book beyond the library and the traditional bookstore, into railway stations, chain stores and onto the streets'.[13]

If customisation and atomisation of institutions were the potential outcomes of urban technology in an earlier era, then today, with even smarter systems at play, the promise to rescript the city in a more equitable way is more plausible than ever. Moby, the automated food mobile, can be located in small remote sites or in areas where real estate is too expensive for services with low turnover and modest profit margins. Too often urban planning premises economies of scale, resulting in corporate dominance in the city. For example, take the downtowns of many major American cities, where development hinges on an 'anchor tenant', which is typically a big franchise with resources to invest in and occupy large floor plates. The downside here is that the corporate franchise model currently espoused by developers in cities produces banal urbanism – Paris's Champs-Élysées ends up looking the same as London's Oxford Street, while the only cultural production is consumer capitalism, in the form of cheap imports and fast fashion.

In this context, the potential for automated retail is a more diverse, cost-effective and eclectic way to think about shopping in the city and serve communities that are classified as food islands or beyond profitable delivery boundaries. Small automated retail pods are not only economically feasible but offer other bandwidths of urbanism and thus new forms of cultural production. Moreover, machine infrastructure provides a different form of retail entrepreneurship, allowing an alternative to the labour-capital that currently exists in the industrial-retail apparatus. Rather than working in a store for the minimum wage (or, worse, on commission), one can rent an automated retail pod and market one's own creative talents. In this way, the irony of automated retail infrastructure is this: while born from the logistical intelligence of industrial capitalism, it might actually deliver the opposite effect – that is, accomplish 1960s radical and anti-establishment pledges of an independent lifestyle based on self-management and a personalised relationship between work and production.

New Typologies

While machine infrastructure of the logistical era fulfils the promises that postwar computing technologies and cybernetic theories could only allude to, at the same time, making good on an old claim is not enough. To this, an additional hypothesis is offered. That automated retail is part vehicular system, part information network and part architectural interior implies that urbanity is now extended beyond architectural form to new hybrid species of space. Rather than being articulated solely by building figure, the city is, instead, composed of smart, dynamic, responsive entities developed equally across multiple design disciplines, from information to industrial and from product to graphic design. Automated landscapes thus open up the design of the city to a range of creative stakeholders and, by extension, to an array of new spatial typologies and their corresponding effects. ᴅ

Notes
1. Tony Peng, 'Amazon Go vs Alibaba Tao Cafe: Staffless Shop Showdown', *Medium*, 21 January 2018: https://medium.com/syncedreview/amazon-go-vs-alibaba-tao-cafe-staffless-shop-showdown-3f3929393d62.
2. Nick Wingfield, 'Inside Amazon Go, a Store of the Future', *New York Times*, 21 January 2018: www.nytimes.com/2018/01/21/technology/inside-amazon-go-a-store-of-the-future.html.
3. Adele Peters, 'The Grocery Store Of The Future Is Mobile, Self-Driving, And Run By AI', *Fast Company*, 13 June 2017: www.fastcompany.com/40429419/this-tiny-grocery-store-is-mobile-self-driving-and-run-by-ai?lipi=urn%3Ali%3Apage%3Ad_flagship3_feed%3BeE7B%2F7AoSt6iYiwcV7IANg%3D%3D.
4. Emma Tucker, 'Wheelys' Mobile Mart is a Self-Driving Store with a Holographic Shop Assistant', *Dezeen*, 28 June 2017: www.dezeen.com/2017/06/28/wheelys-self-driving-moby-mart-grocery-store-holographic-shop-assistant-design-technology/.
5. Clare Lyster, 'Logistics as Urban Choreography', *Harvard Design Magazine* 47, Winter 2017, pp 10–16.
6. Brad Jones, 'Alibaba Unveils Plans for an Electric Vehicle Vending Machine', *Futurism*, 14 December 2017: https://futurism.com/alibaba-unveils-plans-electric-vehicle-vending-machine/.
7. 'Starship Technologies Launches Pilot Program with Domino's Pizza Enterprises', *Starship*, 29 March 2017: www.starship.xyz/press_releases/starship-technologies-launches-pilot-program-with-dominos-pizza-enterprises/.
8. Malek Murison, 'Hermes and Starship Technologies to Test Delivery Robots in London', *Internet of Business*, 13 April 2017: https://internetofbusiness.com/hermes-starship-delivery-robots-london/.
9. Matt Simon, 'San Francisco Just Put The Brakes On Delivery Robots', *Wired*, 6 December 2017: www.wired.com/story/san-francisco-just-put-the-brakes-on-delivery-robots/.
10. Jonathan Schieber, 'Robomart Is The Latest Startup To Try And Unseat The Local Convenience Store', *Techcrunch*, 6 January 2018: https://techcrunch.com/2018/01/05/robomart-is-the-latest-startup-to-try-and-unseat-the-local-convenience-store/.
11. Emelyn Rude, 'Like a Rolling Store: These Mobile Shops Changed Rural American Life', *Time*, 24 May 2016: http://time.com/4344621/history-rolling-store/
12. Kathy Velikov, 'Tuning Up the City: Cedric Price's Detroit Think Grid', *Journal of Architectural Education*, 69 (1), 2015, pp 40–52.
13. James Bridle, 'What Publishers Today Can Learn from Allen Lane: Fearlessness', *Publishing Perspectives*, 28 April 2010: https://publishingperspectives.com/2010/04/what-publishers-today-can-learn-from-allen-lane-fearlessness/