Territories of Equivalence: Objects of the Logistical Apparatus

Clare Lyster

Introduction

Whether we admit it or not, logistical flows are embroiled in our lifestyles. Priority shipping is common practice; messaging in real time with a friend in a remote location is taken for granted; millisecond transmission signals, such as those used by e-traders, are elementary and ordering goods with an app for home delivery within an hour is becoming routine. Every day we become more entangled with the convenient, yet increasingly abstract procedures of logistical regimes, from online shopping to shared infrastructure, and the corporate actors, from Amazon.com to Uber, that make them possible.

The space of logistics is a juggernaut and comprises many components. From transportation infrastructure (ocean freight lines, massive container ships, cargo planes, trucks and other autonomous vehicles) to fully contained urban areas (Special Economic Zones or SEZs); from architectural interiors (sorting facilities; fulfilment centres and delivery depots) to sophisticated software (algorithms, data capturing and identification systems); from virtual and real communication systems (fibre optics to WiFi) to technological equipment; and last but by no means least, political matters, in the form of soft labour laws and predatory employment tactics. The space of logistics is best described as a large multi-scalar assemblage, whose territory extends from the planetary (satellites) to the local (a doorstep). Furthermore, the many facets of logistics coexist and mutually energise each other, endlessly proliferating the madness and comedy that is at the centre of our lifestyles and that fuels the neoliberal machine in all its phantasmagorical forms, from efficiency to abstraction and from convenience to desire. Moreover, expeditious communication streams and synergies between all the parts amplify the logistical apparatus beyond the tangible and real, in such a way that it is no longer a comprehendible geo-spatial phenomenon but more akin an existential ecosystem – ecosystem that is subconsciously omnipresent but also one that is often nebulous and hidden from the users who interact with it (even without understanding what logistics is or how it works, one participates). As Gabrille Esperedy writes, when articulating the agency of metadata in our daily lives, in particular when we conduct Internet searches, 'few of us contemplate the algorithms when what we're after are the answers'.[1] One can be enmeshed in the space of logistics, yet at the same time one is alienated from it. In other words, one is simultaneously in and out of its space. It's there, but it's not really there.

In his recent book, English ecologist Timothy Morton, coins the term 'hyperobject' to describe large-scale spatial and temporal phenomena that have an impact on the earth. He argues that a significant feature of a hyperobject is that, although it is real and present, one cannot see or touch it. Hyperobjects, he writes, 'cannot be directly seen but can be thought of and computed and represented',[2] moreover 'we tend to think of them as abstract ideas because we can't get our heads around them, but that are nevertheless as real

as hammers'.[3] Morton's focus is on a particular set of hyperobjects – complex environmental phenomena, in particular, geological transformations of the earth's surface in the Anthropocene, that he believes will eventually cause the demise of the world. For example, global warming, which he renders a hyperobject because one knows it is present and understands its consequences but at the same time, global warming is not a completely legible convention. You cannot see it.

However, Morton goes on to explain that even within their opaque state, hyperobjects provide evidence of their existence, what he calls a 'footprint' or a 'manifestation'. This is best expressed as a sort of quantifiable clue in time and space that helps us understand the larger whole. For example, rising tides and more frequent storms are footprints because they provide demonstrable hints of global warming. Similarly, he cites soot found as far away as the Artic Circle in the late eighteenth century as a footprint of another hyperobject that is of interest to him (he focuses on hyperobjects with ecological consequences), industrialisation. So while a hyperobject may remain tenuous, immaterial and non-figurative, the footprint(s) provide a close encounter with it, awarding intimacy with an otherwise abstract apparatus.[4]

As a way to advance a discussion of logistics in design, I want to appropriate Morton's theory here, for the logistical apparatus might also be conceived as a hyperobject. First, not unlike global warming, logistics is a dark paradigm of industrial capitalism with significant geophysical consequences. International production combined with the world's insatiable demand for goods is an ecological crisis in itself when it comes to abuse of resources and systems of waste. Secondly, logistics is a large-scale spatio-temporal phenomenon that is simultaneously tangible and hidden, fathomable and abstract, real and virtual. You know it is there (when you order online or when your package arrives at your door) but you cannot really see it. Finally, logistics can be considered a hyperobject because it possesses footprints that allow relative closeness with the intangible procedures of its abstract operations. Think of them as momentary reminders or fragments that provide a glimpse of something bigger. For example, a FedEx envelope that holds your documents. The envelope, with its tag and codes is a footprint of the larger realm of logistics, in this case the exigencies of priority shipping. However not all of Morton's footprints are necessarily objects, in fact, the examples used above (rising tides and storms) suggest that footprints may also be processes, stories and environmental phenomena, or any inanimate entity.[5]

Logistical footprints

In the 1970s logistical flows became part of our daily routines, when many technologies invented and developed in the post-war era moved out of institutional think tanks and into mainstream use. For example, the barcode (placed on a pack of Juicy Fruit in 1974), early internet systems such as Arpanet (1969–1971), and Intel's Microprocessor (1971), to name but a few.[6] While perceived as novel artefacts in their day, these devices became early footprints between the public and the virtual world of information systems and product inventories. In the ensuing forty years, we have experienced rapid transformation of the logistical, courtesy of a range of new technologies from satellite infrastructure to robotic systems, and these bring with them a whole range of associated footprints, which provide an interface with the entire circulatory system of logistics. In particular, I'm referring to the gadgets, objects and devices in our cities and in our homes that augment our interaction with logistics and that make their operations legible within the everyday.

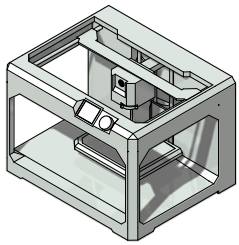
So far, we have seen some reportage on the objects of logisticalisation. Marc Levinson's research on the intermodal container, the paradigmatic 'gizmo' of logistics is an important precedent

here as a lens through which to decode the logistical, and other scholars have looked at port terminals, fulfilment centres and distribution depots.[7] While significant in the larger circuits of flow, these logistical manifestations exist in the manufacturing realm and are not readily found in our everyday surroundings so they are not necessarily the footprints of logistics that the public interacts with on a frequent basis. It might therefore be useful to explore the logistical objects that are increasingly making their way into the spaces we inhabit. One might think of, AI devices known as home assistants, such as Amazon Echo or Google Home, reading platforms such as the Kindle; or home shopping instruments such as Amazon Dash. One might also think of routers and domestic robots (from Romeo to Gita) or objects controlled by apps that can feed your dog (The Furbo), to other forms of smart equipment that record data in the home. Other ready examples include 3D printers, or Velop, a gadget that expands the range of your WiFi so you can work in your garden, personal accessories from Google glasses to Fitbit watches to RFID tags in clothing fibres. One might also include the objects of online commerce, from shipping envelopes and packing boxes that clog up your kitchen, to transportation vehicles, such as drones and delivery trucks that are found in our cities and neighbourhoods.[8] These are the artefacts, devices and procedures that we rub up against each day and they offer a fleeting access to the larger abstract world of logistics. These are 'the stuff' of logistics and where global flows hit the ground in very specific ways. [Fig. 1]

Attempting to understand larger phenomena, or the world in general, from the perspective of objects has recently become a recognised alternative approach to metaphysics by scholars and artists in a variety of disciplines. Object Orientated Ontology (OOO) is a philosophical movement based on the fact that objects are not as we perceive them – inert material things with shape and function – but are autonomous entities that can exist outside of human agency.[9] In OOO, humans and objects share equal status and all inanimate entities have a consciousness. In other words, like humans, objects are beings. This perspective both builds on, yet differs, from Heidegger's philosophy of tools, which argued that a tool's being was established through (human) use – what he identified as a 'readiness to hand'.[10]

That an object's meaning is established through the subject's personal and constant interaction with it, renders the object dependent on human thought. However, at the same time, since this dependency occurs at the level of our subconscious, our reliance on tools is taken for granted and their meaning is withdrawn, unless a tool breaks, in which case we fully understand its agency. Furthermore, Heidegger believed that objects do not exist in isolation but are part of a larger system of relations, which provides a context for their use. For example, our understanding of a knife in a kitchen is different than if we encountered a knife elsewhere.[11] OOO abolishes the subject-object hierarchy that is the foundation of many anthropocentric philosophical traditions and claims that objects have a hidden agency beyond our comprehension and outside their material attributes and use, a concept that is gaining traction under a larger label, titled 'Speculative Realism', which includes not just literary and philosophical works (such as OOO) but also works of visual art that represent a post-humanist world through emerging technological processes and machines (these are often jarring and uncomfortable depictions) or deploy objects as a way to look at the world beyond human agency, on the assumption that humans have lost the capacity to make decisions about their own world.[12]

Both Speculative Realism and OOO encourage new ways to express and discover how technology, meta-systems and objects (including humans) interact to decentre traditional anthropocentric constructs. Not unlike actor-network theory, it argues for a social theory through relationships



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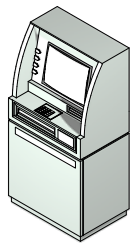

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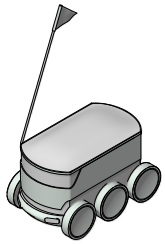

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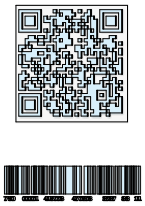

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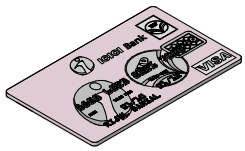

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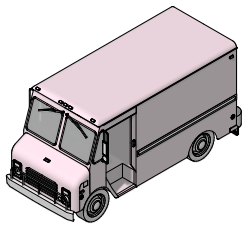

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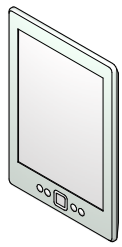

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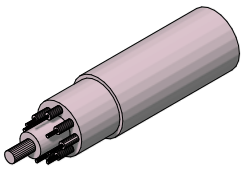

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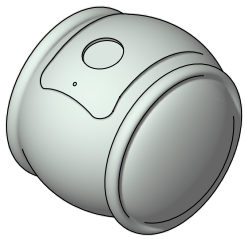

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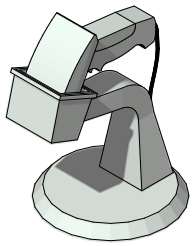

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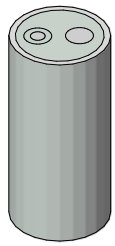

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Fig. 1: A catalogue of some of the more popular logistical objects that we encounter everyday.
Clare Lyster.

1. 3D printing machine
A machine for *Additive Manufacturing*. Allows for the printing of 3D objects from a computer file. Despite its elimination of manufacturing jobs, it promises to cultivate local production and custom fabrication. No need to wait for delivery, just print what you need, when you need it. Invented by Charles Hull who issued a patent for a stereolithography apparatus in 1986.

2. Automated teller machine (ATM)
Early example of an automated interface in the banking industry from 1967. Otherwise known as a cashpoint. Early machines used tokens rather than a card and PIN number. Offered convenience, speed, self-service and 24-hour access to banking that is now taken for granted. Earliest technological platform to enter the city.

3. Cargo robot
Semi autonomous, mobile container that moves around the city. Currently being tested by food delivery companies. One popular design is a six-wheeler by *Starship Technologies.* Characterised as a cooler on wheels, these little gizmos use AI technology to navigate. Controlled by cameras and sensors and traveling at six kilometres per hour, they are designed to deliver goods locally in fifteen to thirty minutes within a three-kilometre radius. Robots have been active in industrial and hospital settings for a while but now might be your new pet.

4. Communication satellite
Data network, enabling high speed communication across long distances. Involves receivers, transmitters and a relay, which is typically a computer controlled man-made machine in orbit. Works courtesy of uplinks and downlinks between the earth stations and the relay. Orbits range vary from low-earth orbit (2,000km); medium-earth Orbit (20,000km) and high-earth (36,000km +). According to *Center for Space Standards and Innovation* there are currently about 3,500 operational satellites.

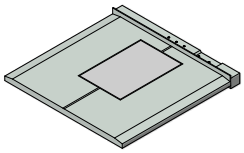
5. QR code
Quick Response Code comprising black squares on a white background. Same principal as the barcode but holds more data since information is contained horizontally and vertically.

6. Barcode (UPC A encoded barcode symbol)
The twelve and thirteen digit UPC barcode is the most familiar barcode pattern used today. Comprised of seven vertical blocks of black and white lines. It was invented by George J. Laurer (with help from William Crouse and Heard Baumeister), an engineer at IBM in 1973 marking the dawn of automated management systems in popular culture.

7. Credit card
A standardised plastic card measuring 8.56cm x 5.398cm that is used to make payments. Initiated by B*ank of America* in 1958 and computerized as a network in 1973. The magnetic strip was introduced in 1979, allowing data to be stored electronically. This has recently been replaced by a chip for added security.

8. Delivery truck
Specially fitted transportation vehicle for ground delivery. Augmented by route planning software to optimise delivery (or pick-up) sequences.

9. E-reader
A small hand-held tablet-like digital device for the purpose of reading e-books, magazines and newspapers that are downloaded via Wi-Fi from a network. The most popular example, is Amazon's Kindle (2007). In April 2017 there were over 6.9 million titles available in Amazon's US Kindle Store (according to Wikipedia and Amazon.com). Not quite the *Library of Congress* but getting closer everyday.



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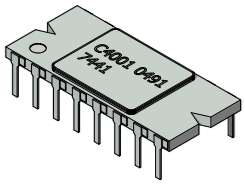

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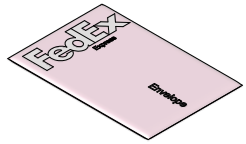

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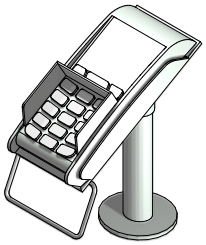

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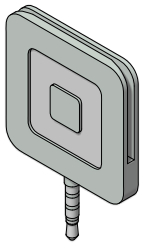

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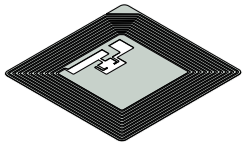

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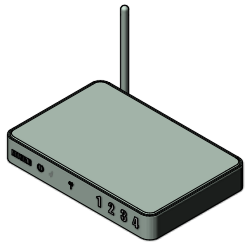

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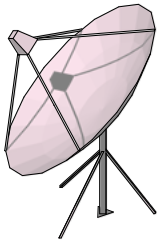

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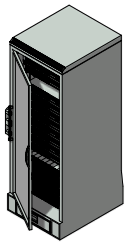

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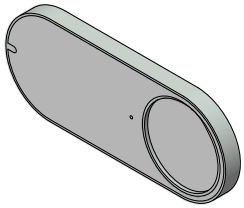

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10. Fibre optic cable
Communication conduit comprising thin strands of plastic or glass (fibres) along which data is transmitted via light beams. Suitable for high speed transmission over long distances. Embedded in the ground or laid on the ocean bed.

11. Gita
A personal cargo robot (cargo carrying system). Holds up to twenty kilograms with a battery life of eight hours.

12. Handheld scanner
Reads a barcode by scanning a laser light over the black and white lines in the code. Some are pocket-sized and wearable. Aids in the tracking and management of product inventories.

13. Home assistant
Home Assistant is an automatic platform that enables one to control devices in the home, as well as ask questions, receive weather updates and so on. It takes the shape of a small object the size of a teapot that sits on the kitchen counter. Amazon's version, called the *Echo,* uses a life-like voice system. Voice activated. Runs via command and AI systems.

14. Laser scanner
Reads a barcode by scanning a laser light over the black-and-white lines in the code. Found in supermarkets and grocery stores. Aids in the tracking and management of product inventories.

15. Microchip (Intel 4004)
Small central processing unit (CPU) invented by Federico Faggin, Intel Corporation, 1971. It could perform 92,000 instructions per second and was carved from a single piece of silicon. Allowed the commercial production of small-sized computers.

16. Packing box
Prefabricated heavy-duty paper or paper board or corrugated fibre-board container. First used in England in 1817.

17. Packing envelope
Standardised one-rate package size (24cm x 32cm) used for priority shipping by a range of couriers.

18. Point-of-sale terminal
Credit card reader. Popular from the 1980s onwards. Replaced the Zip Zap machine. That took an imprint of a card instead of reading the magnetic strip.

19. Portable point of sale
Small gadget that attaches to a smartphone enabling an individual or small business to process credit card payments. For example, Square.

20. Radio frequency identification tag (RFID)
A small labelling system that tracks and collects data to trace objects. Used in combination with a data network and a reader, for example, the chip on a credit card. A typical tag (chip) can hold sixty-four characters.

21. Router
A device that receives data through a phone line and then converts that data into radio waves to be picked up by your computer, smartphone or games console and transmitted into internet data again.

22. Satellite dish
An instrument that receives or transmits information from a communications satellite in the form of radio waves.

23. Server
A centralised CPU shared by one or multiple computers (clients).

24. Shopping wand
Personal hand held smart device that allows one to order goods online by saying the word or scanning a barcode. Amazon.com has a prototype called Dash. Part of a smart network to streamline supply and demand.

25. Smartphone
Handheld communication device that works on radio waves/frequency and an internet connection. For example, the Apple iPhone (2007) or the Samsung Galaxy (Android). Developed from early mobile phone technologies (such as that perfected by Motorola in 1973).

that exist between things and systems that are not necessarily managed or controlled by human thought.[13] It is in this context that Morton positions his analysis (meaning) of the hyperobject. He writes, 'it will become increasingly clear that hyperobjects are not simply mental (or otherwise ideal) constructs, but are real entities whose primordial reality is withdrawn from humans'.[14]

While a report of object theory is far beyond the confines of this article (and this author), nonetheless, whether you believe OOO is philosophy or a mere intellectual trend, it is a constructive schema to help us theorise the space of logistics, which promises (if it is not already promulgated), a post-human ecosystem, where automated objects and machines are slowly replacing individual agency at all levels and establishing themselves beyond human comprehension. Moreover, OOO is especially helpful in contemplating the increasing range of smart objects – logistical gadgets and gizmos that now inhabit our spaces, in particular, to comprehend a world where humans and gadgets influence each other on equal terms, or even, as artist Eduardo Navarro points out, a world where objects can even exert influences on each other. This is clearly illustrated by Amazon, who filed a patent in November 2017 for a 'voice sniffer' algorithm that would detect 'trigger' words in human speech and store them for target advertising. This means that unbeknown to you, your Amazon Echo might be listening and using your own diction to influence your decision making. In this case, logistical objects are monitoring what you say and communicating this knowledge to other entities.[15] This comes as no surprise, since logistical objects already overlap and talk to each other, so to speak. Think of the object communications required to perform a single online purchase from order to delivery (home computer to data cloud to algorithm to robotic picker to cardboard box to truck to doorstep). Think what's involved in ordering your groceries via PeaPod, having food delivered, or talking with a friend on social media. The gadgets and devices automatically work in combination to perform larger tasks.

In identifying and visualising some of the common footprints of logistics, it might be worthwhile here to refer to the work of writer and artist James Bridle, who in 2012 coined the term The New Aesthetic, which has emerged as a new visual art movement. Bridle began by documenting photographs of technological devices and their processes on a micro-blog via Tumblr. These images were what he called a visual shorthand to represent society. For him, broadcasting visual evidence of technological systems was a way to explain how virtual procedures are manifesting themselves in the physical realm. His work focuses on using images of a range of footprints as a way to understand what is going on in the world around us. In a much-quoted article on the topic in *Vanity Fair*, Andrew Blum describes Bridle's work as the way that artefacts of a particular era are removed from their context and deployed as cultural icons and aesthetic objects, like Warhol's soup can or Duchamp's urinal, but Bridle offers a more robust motive. He writes:

> So for me it's not about the future, it's simply about encouraging a more inquisitive interest in the present. If I have a fear it's that people simply do not analyze the systems around them. We increasingly design for an illegibility in technology – we try and make it obscure and distant and as seamless and invisible as possible. It makes it very, very hard to be an actor in the world, to have an effect politically or personally, if you're being acted upon by systems you don't recognize. My hope is that there is better thinking and education about technology so that doesn't happen.[16]

Bridle's pursuits have spawned an entire art movement based on technological imagery. His *Drone Shadow 002* outside a gallery of the Istanbul Design Biennial exhibits the darker forces of new technologies, that plays to the dystopian theories of OOO, a world of smart objects dominating human agency.

Deploying the visual language of logistics is making its way in wider circles. The fashion house Chanel used data storage servers in their window display in 2017, and this year Prada recreated the interior of a warehouse for its fashion show in Milan. Male models strutted the runway in helmets and shiny industrial uniforms exuding a robotic vibe. It seems that footprints are not just tools to decode but logistical objects are fostering a fully fledged aesthetic style. But this is no real surprise. Architects and designers have consistently borrowed industrial aesthetics to rethink the form of products, interiors and furniture. Whether this was machine aesthetics (Le Corbusier's Pavilion de l'Esprit Nouveau, 1925), factory appeal (the Eiffel Tower, the Crystal Palace), a streamlined appearance (The work of Raymond Loewy and Norman Bel Geddes),[17] biomorphic forms (Isamu Noguchi) and, or, military methods (the Eames's).[18] That Le Corbusier described his 1925 pavilion as a 'machine' for living in and the contents as 'domestic equipment' is also helpful here. Abandoning symbolic characterisations of household artefacts in favour of conveying them as standardised tools directly aligned the home with spaces and processes of industrial production (the house was a factory). Today, some of the logistical footprints mentioned above are to be found in the home. Perhaps it is here that the so far fragmented narration of logistics, hyperobjects, footprints and objects is best interwoven as away to explore the implications of logisticalisation for space.

Objects and territory

> I had, therefore, to go back to the sources, as I could not hope to understand the effects of mechanisation without knowing, in outline at least, its evolution. (Giedion, 1948)[19]

Understanding the home from the perspective of industrial gadgets (or gizmology) has a long history in architecture from Sigfried Giedion to Reyner Banham to the Italian Design movement in the 1960s and 1970s, a quick summary of which might be useful here as context for our contemporary situation.

Giedion's encyclopaedic index of advances in mechanisation in various realms (from industry to the home) was a tool to comment on the philosophical effects of mechanisation on space and on society. It was an alternative history of architecture that emphasised the transformation of space from the perspective of advances in mechanised equipment. Of particular interest is his commentary and presentation of the objects of industrialisation that changed the interior space and management of the home, for example, the oven or the bathtub, which served to standardise room dimensions. Giedion was criticised for overly metaphysical interpretations of the objects of industrialisation in arguing that our reliance and sometimes nonchalant (he uses the word neutral) relationship with these objects served to illustrate that mechanisation was as much an epistemological discussion as it was a technological one. Beyond improving human comfort and eliminating the drudgery of work, conceiving the world through the objects we use might also result in destructive associations. He uses advances in how animals were slaughtered as a case in point, highlighting how standardised killing methods could become so widespread and accepted.[20] Nonetheless his integration of industrial objects with larger forces in society and putting forth a theory of design from the perspective of everyday objects is a useful precedent here.

Reyner Banham's seminal essay 'The Great Gizmo' published in *Industrial Design* in 1965, about the domestication of the Wild West though technological invention, charts a range of industrial devices – from the radio transistor to the outboard motor – and how these contributed to the domestication of territory and more generally the growth of gadget culture in the US. In fact, Banham claims that what distinguished America from other parts of the world was its incorporation of gadgets into

the home and the elevation of comfort as a result, citing technological inventions form the mason jar to air conditioning. He writes: 'Gadgets were what awarded a sort of indigenous domestic architecture not found anywhere else', and 'Americans believe in technology and that is where to look for the greatness of their domestic architecture … the American home being a shell in which the gizmos did the work'.[21]

But Banham is also quick to point out a linkage between gadgets and larger meta-systems, for example, he cites the Sears catalogue as the mechanism by which many of the gizmos he profiles were distributed, as if to imply that as gadgets developed, they became less independent and more reliant on the hyperobjects (in this case the mail order infrastructure of the Sears and Roebuck Corporation) that sustained and enabled their use in space. In 'The Home is not a House', published in *Art Forum* in the same year, Banham performs another act in gizmology, from the perspective of technological gadgets, this time through the lens of mechanical equipment in the home. That the domestic environment became a mecca for gadgets and gizmos that did all the work, led him to ponder if one needed the domestic shell at all. Francois Dallegret's image of cavemen in a bubble that accompanied the essay, perfectly illustrated the dematerialisation of space that resulted from advancements in the mechanical realm that led us to think that objects had the power to displace architectural enclosure.[22]

Later in the 1970s, post-war consumption changed the home in terms of the accumulation of stuff and new technologies, from the colour TV to the microwave. Consumer product design was very influential in the design disciplines (architecture, industrial and product design) and this was most expressly documented in the famous 1972 exhibition *Italy: The New Domestic Landscape* at MoMA in New York. The exhibition was organised along different categories of object making and object relations, from non-functional formal objects to furniture to industrial gadgetry and networked environments. Of particular interest are the installations that explored the impact of new technologies on domestic lifestyle. I'm thinking here of Ugo De La Pietra's 'Casa Telematica', designed originally for the show but subsequently developed over the next ten years for the Milan Triennale in 1983. Here, De La Pietra is attempting to integrate new audio-visual communication objects in the form of computer and video screens supported by a centralised data base. One prototype included an armchair with an embedded screen. Also featured in the show was Superstudio's Supersurface and the firm's corresponding video proposing a lifestyle devoid of any building in favour of an endless Cartesian grid – an energy network at different intensities, augmented when necessary by objects such as a car or a radio or a portable refrigerator that provided the fundamental services to the citizens of this alternative lifestyle. Here, object is not read as a status symbol or an artifact of materialism, but instead presented as a service item. Furthermore, the surreal montages are particularly useful (visuals that would not be out of place in Bridle's blog, *The New Aesthetic*) in communicating how these service objects and the meta-network that furnishes them would facilitate a nomadic lifestyle. The idea was certainly ahead of its time, because the notion of just objects and territory is now a completely plausible concept in the logistical era. Superstudio's digital nomads are now an actual phenomenon – just look at the countless individuals known as freelancers of the gig economy, who move around the world sans fixed abode, relying on global franchise networks (from WeWork to Starbucks) and fast broadband, accompanied by iPhones and portable servers, to sustain their roaming work/live lifestyle.

In summary, technological objects in different eras have either standardised space, displaced it, integrated it or completely superseded it. Within this genealogy, it would be useful to explore more

specifically the spatial implications of contemporary objects.

A theory of equivalence

A few years ago, I stopped at a small cabana-type hut on the side of the highway after being tempted by the promise of fair trade ground coffee, brewed by a local company. A cool young hipster type greets me and sells me an expensive beverage. It is not a problem that I don't have enough cash, for he presents a tiny square gadget measuring about a three-and-a-half centimetres and attaches it to his phone. In seven seconds I had paid for the coffee with a credit card. Not long after a friend produced the same item at a book launch when faced with the problem of selling books to non-cash-holding customers. Of course, this is all commonplace now as taxi drivers and waitresses use the tiny stamp-sized square thing to take payment. The Square Reader, invented in October 2013 by Jack Dorsey of Twitter fame is a portable point of sale used in conjunction with an app and by February this year was being used by over seven million customers. Square's credit card reader can be purchased for $7.99 and plugs into any hand-held device. The company's motto is 'accepting credit cards everywhere'. Today a card can be read in 3.2 seconds and the device (comprising a head and pin) was recently redesigned to read a chip.[23] This means that the head comes equipped with a tiny battery that extracts the pertinent (and secure) information from the chip on your card. According to an article in *Wired*, 'algorithms aim to keep the reader powered long enough to go through a busy day of business without needing to be charged'. In the future if PIN numbers become mandated in the US, then Jesse Dorogusker, head of hardware design at Square, hopes that customers will enter these into the host device, rather than include a keypad, so as to keep the head of the device as small as possible.[24]

The real interest here is not necessarily Square's business model: to serve small businesses and customers with low turnover – businesses pay a 2.75% rate per payment to Square for use of the system's software and the reader is free on signing up. Rather, Square offers complete mobility not to mention the benefit of DIY financing, although access to WiFi is required, which makes it reliant on a larger service network (hyperobject), which might be problematic for those living in Internet holes and locations with slow service. (In this way its not as smart or independent as the walkie-talkie, which Banham praises for being able to work in isolation without infrastructure). Square also lives up to American sociologist Daniel Bell's theory that technological items would continue to get smaller and smaller as the post-industrial society developed and when new knowledge based technologies would emerge. This seemingly tiny footprint, (a small unit of high performance, as Banham described his gizmos) that fits in your purse or back pocket allows you direct and automatic access to a larger stream of money flows.

Yet the Square card reader is only as smart as the other accoutrements that make it possible, evidence that logistical footprints work in unison with each other to function as a larger symbiotic ecosystem, that in this case ranges from the smart phone to the battery, from the algorithm to the app. In other words, objects catalyse other objects. Even the ubiquitous credit card that is used to make payments is a fundamental part of the ecology of logistical exchange. Introduced by Diners Club (who issued cardboard cards) in 1950 and then by American Express and Bank of America in 1958, the functionality of the card was expanded in conjunction with two computerised networks (what we know today as Visa and Mastercard) beginning in 1973. The magnetic strip was introduced in 1979, allowing data to be stored electronically, and this has recently been replaced by a chip for added security. Square is the latest development in a line of hand-held readers that became popular from the 1980s onwards, all based on the same principal, including

the old zip-zap machine that took an imprint of a card instead of reading the magnetic strip. (Try carrying that around in your purse).

Square provides the latest venue for automatic banking, although the bank as institutional space has been disappearing ever since its ancestral footprint, the ATM, was set in place, first in England in 1967 and later in the US in 1969, with the result that the bank was no longer the de-facto host for monetary exchange and financial functions.[25] Instead, banking as well as a whole litany of other public and commercial activities in our cities and our homes is now curated and accommodated by little gadgets and their affiliated infrastructure. For example, even an unremarkable edge of a highway is activated courtesy of a credit card, a miniature reading device and a good cup of coffee. A new relational triad emerges between the object (and its ecosystem), territory and user, one where all parts exist with relative equality to each other.

Logistics challenges our perception, expectations and our traditional concepts of space-making. Many of the footprints presented here blur the lines between architecture, furniture, utensils and living creatures. Some have sensory attributes, for example, the Amazon Echo is a twenty-two centimetre cylindrical smart speaker that connects to your home assistant service (Alexa) that listens and talks to you in a life-like voice. It can tell you about the weather, play music and answer questions. This ambiguity (or confusion) allows us to reflect upon the traditional metaphysical categories we employ when contemplating the relationship between objects and space. For example, think how strong the TV was in orientating the furniture in the living room and the resulting occupation of the space (everyone sat on the sofa together). Instead, today, we witness spatial atomisation as family members split up into their own micro-zones with an iPad or phone or tablet.

Moreover, logistics offers an opportunity to contemplate the new agency of objects within the narrative of automation and post-human agency. Just think of how the contemporary home works; AI devices take on human attributes; smart systems integrate manual functions (closing our curtains or turning on the heat) and deep learning algorithms make decisions for us. If industrial standardisation in the 1920s provoked Le Corbusier to present the house as a 'machine for living', then logisticalisation pushes the relationship between humans and processes of capitalist production even further. At least the house as a factory still recognised the dominant role of human control. Could it be that Graham Harman is correct after all in making us believe that in this era, objects now dominate?[26]

Not necessarily. For now, it might be more productive to contemplate OOO's thesis of equivalence more broadly – no hierarchy between subject, object and territory, for this produces a more polemical claim for architecture, that being a sort of hazy-spatial condition, where one categorical species does not dominate over the other. To this end, I would like to conclude with a short description of a project by Japanese architect Junya Ishigami, which provides a strong demonstration of this testimony.

Ambiguous Space is how Junya Ishigami describes his Kanagawa Institute of Technology in Atsugi, Japan. A large, universal, one-room space built with flexibility in mind, it is less a building and more a landscape. Three hundred and five narrow columns of varying dimensions are located field-like on plan with programmed space in between, carved out like voids or clearings in a forest, where students assemble and work. There is no subdivision or figural interiors, instead structure, furniture and trees (actual potted plants) share the floor plan that is now akin an occupied terrain. Here works of art, furniture, tools, air conditioning units,

equipment, trees, columns and students co-exist in a non-hierarchical, confetti-like distribution of bits. Activities cluster in the void spaces but overall there is a feeling of complete atomisation and uniformity between all the parts since everything is rendered object (humans and inanimate things). Furthermore, a neutral approach to materiality, a polished concrete floor, white gridded ceiling and a thin, almost fragile, glass enclosure that allows a direct relationship to the outside amplifies the effect of uncertainty. While explicit evidence of logistical objects is absent from the photographs of the interior, nonetheless, reading contemporary architecture through the lens of ambiguity – an impartial territory of objects, humans and landscape – is very useful as we try to come to terms with the spatial impact of logisticalisation in our midst.

Notes

1. Gabrielle Espredy, 'Building Data: Field Notes on the Future of the Past', *Places Journal* (September 2013), https://doi.org/10.22269/130923.
2. Timothy Morton, *Hyperobjects: Philosophy and Ecology after the End of the World* (Minneapolis: University of Minnesota Press, 2013).
3. Ibid.
4. Alex Blasdel, 'A reckoning for our species: the philosopher prophet of the Anthropocene', *The Guardian*, 15 June 2017, https://theguardian.com.
5. Morton ascribes the current ecological crisis to the limits and consequences of industrial capitalism, that he characterises as 'a primitive artificial intelligence', and he identifies the steam engine, invented by James Watts in 1784, as the dawn of man's problematic imprint on the earth.
6. More information on these early logistical technologies, and others, can be found in the book, Clare Lyster, *Learning From Logistics: How Networks Change Cities* (Basel: Birkhäuser, 2016), 1–15.
7. Mark Levinson, *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger* (Princeton: Princeton University Press, 2008).
8. I'd like to briefly explain the function of these gadgets for those not familiar with their agency. Many of these are currently used in the US and might not yet be familiar in other contexts: *Home Assistant* is an automatic platform that enables you to control devices in the home, as well as ask questions, receive weather updates etc. It takes the shape of a small object the size of a teapot that sits on your kitchen counter. Amazon's version, called the *Echo* uses a life-like voice system. The *Kindle* was the first popular e-reader introduced by Amazon in 2007. Currently it allows access to 6 million e-books. *Amazon Dash* began as a proprietary wand-like instrument that can be used to order goods via an online account. It now takes the form of a 'button' that automatically replenishes a particular item when needed. *Romeo* and *Gita* are domestic robots. Romeo is a humanoid robot that aids the elderly with normal everyday tasks while Gita is a smart luggage / cargo carrying system. *RFID* is Radio Frequency Identity Identification. In most cases this exists as a tiny tag that holds data, for example, the chip on your credit card.
9. Graham Harman, *Tool-Being: Heidegger and the Metaphysics of Objects* (Chicago: Carus, 2002), 15–49.
10. Ibid., and for the original definition, see also, Martin Heidegger, *Being and Time*, (New York: Harper and Row, 1962 [1927]).
11. Ibid.
12. Examples here include work by Australian media artist Patricia Piccinini, who depicts the consequences of biotechnology, or the Cyprus-born performance artist Stelarc, who incorporates virtual reality and robotics in his work. I would also include the work of architect and film maker Liam Young in this genre. See Isabella Sandes, 'Post-Humanist Art and Speculative Realism', *Interactive,* https://interartive.org.
13. Actor-Network-Theory argues that nothing in the social and natural world exists in isolation but is part of a larger underlying network of forces and associations.

ANT articulates a social theory based on associations between people, objects, things, places and events (Actors), by exploring the relationships and networks between these human and non human actors. While the concept is attributed to French philosopher and anthropologist Bruno Latour, it has been adopted more broadly to understand the transformation of human agency in an ever complex digital environment, in particular, how emerging technologies, communication infrastructure, automation and metadata intersect with human agency to restructure social space.

14. Morton, *Hyperobjects*, 15.
15. Sapna Maheshwari, 'Hey, Alexa, What Can You Hear? And What Will You Do With It?', *The New York Times*, 31 March 2018, https://mobile.nytimes.com.
16. Andrew Blum, 'Children of the Drone', *Vanity Fair*, June 2013, https://www.vanityfair.com). James Bridle, *New Dark Age: Technology and the End of the Future,* (London: Verso, 2018).
17. These categories were originally provided by the architectural historian Richard Guy Wilson. Richard Guy Wilson, Dianne H. Pilgrim and Dickran Tashjian, *The Machine Age in America, 1918–1941, (*New York: Brooklyn Museum, 1986).
18. The Eames fabrication of moulded plywood medical splints for the US Air Force in the 1940s informed the design and production of their famous LCW Chair of 1952.
19. Sigfried Giedion, *Mechanization takes Command: A Contribution to an Anonymous History,* (W.W. Norton and Company, 1948)
20. Bryan E. Norwood, 'Sigfried Giedion (2013) *Mechanization Takes Command: A Contribution To Anonymous History*. Minneapolis: University Of Minnesota Press**',** *Culture Machine* (2015) https://culturemachine.net.
21. Reyner Banham, 'The Great Gizmo', *Industrial Design* vol. 12 (September 1965): 48–59, also published in *Design By Choice*, ed. Penny Sparke (London: Academy Editions, 1981), 108–14.
22. Reyner Banham, 'The Home is not a House', *Art in America* vol. 2 (April 1965): 70–79.
23. 'Squaring The Circle That Is Square', *Pymnts.com*, 17 April 2017, https://www.pymnts.com.
24. Marcus Wohlsen, 'Square Bets Big on Next-Gen Credit Card Tech', *Wired*, 30 July 2017, https://wired.com.
25. Carolina A. Miranda, 'The Unbearable Awkwardness of Automation', *The Atlantic*, 13 June 2018, https://theatlantic.com.
26. Graham Harman, *Object-Oriented Ontology: A New Theory of Everything*, (London: Penguin Books, 2018).

Biography

Clare Lyster is an architect, writer and Associate Professor at the University of Illinois at Chicago. She is author of *Learning From Logistics: How Networks Change Cities* (Birkhäuser, 2016) that explores the implications of logistics for architecture and urbanism. Her research on the topic has been exhibited at the Lisbon Architecture Triennale (2016) and The Seoul Biennale of Architecture and Urbanism (2017).