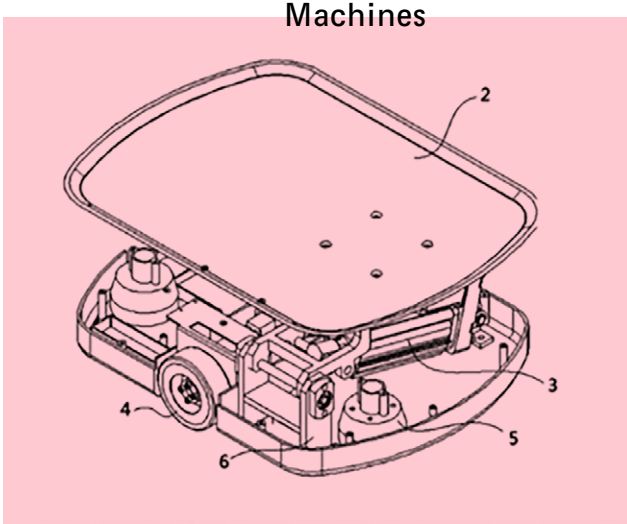
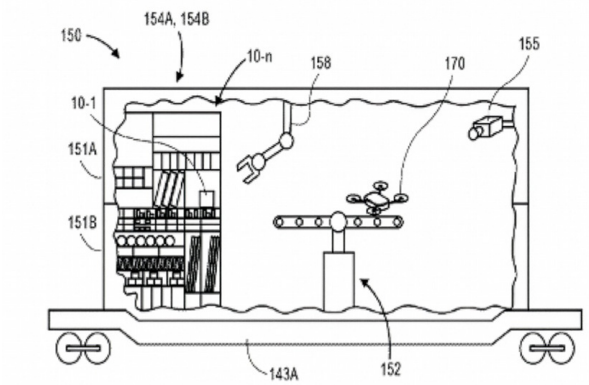
Prior Art

Patents, Geopolitics, Machines





ISBN 978-1-78542-168-6

Prior Art

Patents, Geopolitics, Machines

Edited by Anna Munster, Brett Neilson & Ned Rossiter

CONTENTS 6

16

30

60

74

90

AFTER PRIOR ART
Anna Munster, Brett Neilson
& Ned Rossiter

01 PRIOR ART

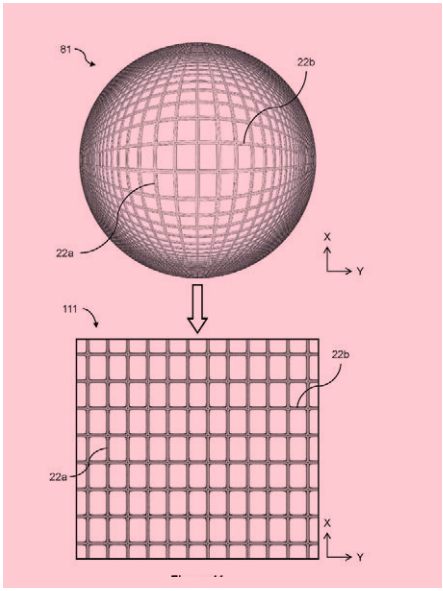
01.1 WHAT CAN A PATENT DO?
Zoe Horn &
Brett Neilson
01.2 AUTOMATION PATENTS,
DESIGNING ENVIRONMENTS,
PARAMETRIC POLITICS
Orit Halpern &
Ned Rossiter
01.3 CRITICAL PATENT ANALYSIS:
DEFINITION, APPLICATION,
AND POSITIONING
Lungani Hlongwa
01.4 THE PATENT BIAS: NOTES
ON "NOTES ON GESTURE" AND
BIAS AS A SOMATECHNIC
Christopher O'Neill

02 PACKET POLITICS

02.1 CORRIDORS
Maren Koehler &
Ned Rossiter

110

134



160

182

198

224

229
240

[above] Calibrating a camera for mapping image pixels to grid points in a storage system, US12430802B2, 2022. https://patents.google.com/patent/US12430802B2/en

02.2 WAREHOUSE LABOUR REGIMES
Davide Blotta
02.3 LOGISTICAL PERSPECTIVES: GRIDS, PRISONS, WAREHOUSES
Mitchell Price

03 AUTOMATED IMAGES

03.1 SYNTHETIC MEDIA, OR, LARGE LANGUAGE MODELS AS LOGISTICAL MEDIA
Zoe Horn, Liam Magee & Anna Munster
03.2 PATENT ANALYSIS: GOOGLE BIGQUERY PUBLIC DATA
Kynan Tan
03.3 PROMPT-SHIFTING: FROM REPRESENTATION TO OPERATION
Chloe McFadden
03.4 WAREHOUSE SIMULATIONS
Luke Munn

04 CONCEPTS
COLOPHON

01.1

AFTER PRIOR ART

Anna Munster, Brett Neilson
& Ned Rossiter

PRIOR ART

All patents have prior art. Prior art is a foundational concept in patent law that refers to any evidence that an invention was already known, disclosed, or publicly available before a patent application was filed. The new can only be established on the back of what already exists. What comes before has absolute priority, even as innovation hardens into imperative and extraction gets framed as an entrepreneurial virtue. Intellectual property encodes a structural anxiety about originality, as if this could be firmly established amidst the fogs and thickets that populate the territorially divided world of patents. In artificial intelligence, where foundational architectures and training methods are built so directly and visibly on prior work, this anxiety becomes unbearable. What presents itself as the future is only the past, finally made computational.

AI and machine learning patents tend toward the universal in their design and speculative reach. Such a tendency may be indicative of globally shared data science research. But it is also suggestive of the physical spatial architectures

of commercial logistics—Amazon and Alibaba distribution and fulfilment centres are among the most prevalent sites of AI deployment.

Bound by representational conventions, linguistic tropes, and legal regimes, patents mark territory. They alert potential competitors that certain ideas are already occupied now and into the future. The multifarious borders at play here are not only national but also technical, geopolitical, and imaginary. Yet patents are registered with national and international agencies, reintroducing bordering dynamics that cut across the techniques and technologies they claim to enclose.

The formatting of the world into states and the governance of invention and intelligence operate on incompatible temporal and spatial logics. Invention and intelligence refuse national containment, carrying the potential to unsettle geopolitical order from within. Whether value produced in common can escape capture is the open question. This is the ambit of politics in automated worlds. There is no patent for political struggle.

Select texts in this volume critically interrogate the statistical, rhetorical, and computational dimensions of patents. Particular attention is given to the automation of warehousing operations. Many examples are drawn from patents documenting automated decision-making in warehouses situated in nation-states such as Germany, Malaysia, Australia, and China. Yet we are reluctant to confine AI, even when registered in patent form, to national borders. We ask instead how patents signal a relation between AI and the multiplication of borders that encompasses the political economy of warehousing and logistical industries.

Our interests include experimental machine learning methods that generate patent texts, the epistemological and political underpinnings of statistics, and the politics of labour-power tied to machines. These are not separate concerns but interlocking dimensions of the same problem—how knowledge, measurement, and bodies are organized under automation.

In pursuing them, we propose that patents on AI provide an index of

emergent geopolitical contests
that accompany, and at times produce,
the automation of culture, society,
and economy.

PACKET POLITICS

Packet politics cut warehouses, inside out. A packet is a unit of data routed across networks and a unit of goods moved through logistical systems. In automated warehouses these two meanings converge. The physical and the computational are no longer separate operations but a single technical process, remaking the production of territory and the governance of labour simultaneously. Packet politics takes this convergence as its object, scaling geopolitics beyond sovereign states and contesting prevailing assumptions that world order mirrors inter-state rivalries or civilizational conflicts, both familiar fixtures of international relations and area studies.

Warehouses are among the vanguard of contemporary capitalist infrastructures, sites where logistics and automation technologies fuse into new configurations of work and territory. Our research moves through operations run

by companies such as Amazon and Alibaba, including the Digital Free Trade Zone on the fringes of Kuala Lumpur airport, where trade, data, and territory converge on a single threshold.

Packet politics questions geopolitics through the objects that warehouse automation produces and presupposes. The warehouse is both an infrastructural form and media container; the patent is its legal shadow, staking territorial claims in advance of its operations. Together they precipitate an emergent episteme, a reordering of knowledge in which the automated production of territory and the governance of labour become inseparable. Packet politics names this reordering, tracing its logics across geocultural and geoeconomic worlds, not least through the automated images by which warehouses see, sort, and extend their reach.

AUTOMATED IMAGES

What is an automated image, and what is an image of automation? How do automated images feed into the modeling of territory and economy, society and

culture? The online proliferation of stock warehousing images from platform companies signals a bias in datasets generated by machine processes, a hyper-managerial aesthetic endlessly replicating itself across archives, training sets, and generative outputs. When large scale text-to-image AI systems parse stock images from online archives, they instantiate the nonconscious determination of image worlds, colonizing the perceptual ground of machine imaginaries before any human interpreter arrives.

Typologies of patent images, stock images of automated fulfillment centres, and historical drawings of warehouse stock and inventory compose a vertical axis of organization, ordered, stratified, disciplined. The horizontal axis is less well-behaved. Leaping between flow charts, patent diagrams, virtual fulfillment centers, and physical packets, it introduces a species violation to these tidy arrangements, a promiscuity, a willful perversion of the calculation and control that warehouse automation recruits and reproduces. Generative and regurgitative at once, these image worlds are in excess of any system that claims to contain them.

This volume traces a narrative arc across historical images of pre-digital warehouse storage, online archives of patent images, flow charts of logistical procedures, and post-GPT3 text prompted images of automated warehouses. Images here are method, not ornament or illustration. In engaging these materials, we deploy speculative approaches that treat warehousing as a diagnostic device, making apparent what the future already is: recursive, autophagic, and remade by the past.

Automated images generate worlds specific to their operation. This volume responds in kind.

We deploy divergent experimental and computational techniques that trace the material operations of automation while striving to maintain a margin of indeterminacy between tracing and re-enacting. The machine learner is at once generator and reflexive prompt, asking us to reassess how images can become the engine and matter of automated worlds. Legal regimes, labor conditions, and territorial milieux coordinate labor and life under technologies of measure. We respond with a repertoire of

computational horror, insisting that the hallucinatory is not a byproduct of these worlds but their normative condition. Termination is not an alternative.

PRIOR ART

01

01.2

WHAT CAN A PATENT DO?

Zoe Horn &
Brett Neilson

What can a patent do? With respect to artificial intelligence, this is a question that is still working itself out. The colonization of artificial intelligence research and commercial application by machine learning has certainly had ramifications in the legal realm of intellectual property, especially patenting. The 2021 grant of South African patent no. 2021/03242, listing the AI system DABUS as the inventor and noting that the invention was autonomously generated by artificial intelligence, is a clear register of this impact. However, the implications of this decision are separate from the problem examined in this short contribution, that is how the intersection of artificial intelligence technologies and patenting techniques generates cleavages of territory and jurisdiction with geopolitical import. Looking at the proliferation of patent pools, patent thickets, patent fogs, and Standard Essential Patents (SEP) that provide the legal environment into which artificial intelligence moves provides a means of examining emerging struggles along the borders of technology, state, and capital.

Although the horizons of artificial intelligence research reveal thick patterns of international scientific collaboration, the intellectual property regimes into which the resulting routines and inventions enter are strongly territorialized. From the 1990s, the internet-based distribution of protected works, signs, and inventions sparked questioning of the principles of *lex protectionis* and territoriality that underlie intellectual property law. The WIPO General Assembly of 2001 marked a turning point, bringing together states, intergovernmental organizations, and non-governmental observers to debate the need for a more internationally coordinated approach to intellectual property governance. However, the 2000s saw courts and legislators affirm more traditional notions of territoriality in an effort to safeguard the regulatory policies of states granting intellectual property rights. In subsequent years, some courts accepted arguments that justified the granting of jurisdiction or application of the law of states other than the country of intellectual property protection. A notable example

is the Court of Justice of the European Union, which in *Painer v. Standard VerlagsGmbH* (2011) addressed the cross-border consolidation of copyright infringement claims against defendants domiciled in multiple member states.

Perhaps the area of intellectual property law in which the conflict between *lex protectionis* and territoriality is most pronounced is jurisdiction for worldwide "fair, reasonable, and non-discriminatory" (FRAND) decisions concerning standard essential patents. These are patents that are essential to the manufacture and sale of standardized products. FRAND commitments arise when patent holders participate in standard-setting organizations and agree, as a condition of having their patents incorporated into a shared technical standard, to license those patents to any implementer on terms that are fair, reasonable, and non-discriminatory. The idea is to prevent patent holders from exploiting their privileged position within the standard to demand excessive royalties or block competitors from the market. Prominent standard setting organizations include those governing

Wi-Fi, Bluetooth, and 5G technologies, and increasingly bodies such as the joint ISO/IEC committee SC 42 and the IEEE, which are developing standards for machine learning, algorithmic governance, and AI system interoperability—making FRAND commitments an emerging concern in the AI patent landscape.

While FRAND decisions have traditionally centred on telecommunications standards, their reach is expanding into artificial intelligence, where standard essential patents apply to digital data processing, recognition of data, and transmission of digital information. In cases such as *Unwired Planet v. Huawei* (*UK—High Court (Patents)* (2017)), courts have used disputes over domestic patent rights to shape the global business arrangements of private parties. Under the principle of *lex protectionis*, patents are established under national law and have legal effect only in the issuing jurisdiction. However, the parties to FRAND disputes are often multinational corporations with operations in multiple jurisdictions. In a number of instances, courts have specified

the details of global FRAND licenses (including royalty rates) that cover not only national patents but also other patents around the world subject to the licensor's FRAND commitments. This means that a single national court—one that adjudicates a dispute technically governed by its own domestic patent law—is in practice dictating the commercial terms of licensing arrangements that extend far beyond its borders, reaching patents issued by foreign governments and business dealings conducted in foreign markets. The result is a kind of noncoincidence of territory and jurisdiction or a new kind of extraterritoriality.

Patenting strategies in artificial intelligence often take different form than those in telecommunications. Some firms have patented AI technologies to prevent other companies suing them for infringement while sharing the same technologies in open source formats to attract research talent and entice consumers. This strategy has been pursued by Meta, which has released its LLaMA large language models as open source while maintaining an extensive

AI patent portfolio, and by Google/DeepMind, which has open-sourced tools such as TensorFlow and AlphaFold while aggressively patenting the underlying architectures. Unsurprisingly, standard essential patents in AI are concentrated in the US, with South Korea and China being the next two countries in the ranking, though China is rapidly closing the gap.

There is nonetheless a clear geopolitical logic to FRAND disputes. Litigious dynamics have mostly played out between SEP holders in the US and Europe on the one hand, and major SEP implementers in Asian economies on the other, such as Japan, Korea, the PRC, and Taiwan. The willingness of national courts to issue anti-suit injunctions—preventing litigants from pursuing parallel SEP-related litigation in another jurisdiction—has sharpened these tensions considerably. In the *Samsung v. Huawei* case of 2018, for instance, the Northern District Court of California prevented Huawei from enforcing an injunction on Chinese SEPs entered by the Shenzhen Intermediate People's Court. In effect, a US court was blocking

the enforcement of a Chinese court's ruling on Chinese patents, illustrating how competing national courts, each asserting authority over the same underlying dispute, can pull in opposite directions and undermine the ability of any single jurisdiction to bring the matter to a definitive resolution.

It is easy to interpret these disputes according to standard geopolitical scripts where AI advances are the object of rising great power rivalries. Yet the extraterritorial and jurisdictional dynamics at play reveal a more complicated picture, one populated by other kinds of borders and struggles that cut across this narrative. One such complication is the problem of patent thickets (known as patent fogs when applied to AI), where the accumulation of overlapping patent rights makes it difficult for smaller players to negotiate licenses with multiple holders and gain access to essential technologies. Patent pools, which aggregate standard essential patents held by different owners into a single licensing vehicle, are frequently proposed as a solution to this problem. However, such pools do not necessarily

bring together patents issued by a single national or international body, and may include technologies that lack protection in some jurisdictions altogether. This makes them complex and heterogeneous entities, whose internal governance arrangements are often opaque and difficult to scrutinize from the outside.

While the temptation is to approach patent pools as price-setting cartels, the reality is more elusive. Cooperation among patent holders may be driven less by the pursuit of compensation than by the mutual promise of immunity from infringement suits, a defensive logic that complicates any simple account of collective market power. Patent pools are also traversed by multiple kinds of borders, of which state territorial boundaries are certainly prominent but by no means the only ones that matter. Nor are they instruments of commoning or sharing, despite what the metaphor of pooling might suggest. They are better understood as container technologies, structures that bundle and obscure the relations of power and capital they sustain, shielding them from outside scrutiny. In this respect, they resemble

the dark pools of financial markets, where the flow and capture of value similarly resist transparency and require careful forensic attention to trace.

Approaching AI through the legal and geopolitical frame of the patent pulls it down from the ether where it seemingly hovers above and increasingly controls the social superstructure. As an analytical strategy, this angle does not quite replicate the emphasis on infrastructure that animates much recent critical investigation of machine learning, neural networks, and other technologies gathered under AI's umbrella. However, patent law, or even law as such, cannot ultimately contain the data and algorithms that power this most recent iteration of capital's operating system. On the contrary, the patenting arrangements surrounding AI tend to burst through the boundaries that law draws around itself, exposing the limits of legal categories and doctrines when confronted with technologies that are global, diffuse, and resistant to jurisdictional assignment.

Patents provide a revealing point of contact between law and technological expressions of power. They can push law

toward what Foucault called the "system of Law-and-Sovereign"—the classical model of rule-bound authority and centralized power from which he argued modern disciplinary and governmental power had already departed. Yet the jurisdictional conflicts that pervade patent litigation tell a different story, pulling law into a field of competing claims and overlapping orders in which no sovereign stands above the fray to mediate or declare an exception. In this space, law becomes overstretched and increasingly ineffective, potentially to the point where AI escapes legal constraint altogether and begins, in effect, to set its own rules.



Photos by Ned Rossiter, 2024



01.3

AUTOMATION PATENTS, DESIGNING ENVIRONMENTS, PARAMETRIC POLITICS

Orit Halpern &
Ned Rossiter

PATENT TECHNOLOGIES

Patents are legal technologies that enclose futures not yet born. As anticipatory devices, patents assert control over the territory of invention. Frequently enough, the economies staked out by legal claims on invention are stillborn, never to emerge beyond the theatre of arbitration in the event of dispute. Parading an aesthetics of minimalism, patents distil an idea of action as bare essence. The sequential logic of instruction, of rules on how a thing works, registers affinity with the family of algorithms. Closing down options, patents seek to define the relation between cognition and invention, production and command, capital and labour according to supranational juridical regimes. All too often such gestural authority fails in the face of defiant states and cultures of piracy.

Automation patents foretell a world of machine operations that eclipse human life, or at least dispense of the subject of flesh and pain that endures servitude to capital. Patents also index new conceptions of territory and labour. Only this is no post-work future, but

rather another form of indentured labour in which consumption is tied to data architectures that authorize transactional compulsions. The patent provides the diagram of capture. As a proprietary form, patents police invention with the force of law. In hitching the formalization of an idea to legal doctrines of ownership and control, patent law exposes its vulnerability to agents who care less for such quarantining of expression. Needless to say, patents provide a skeletal imaginary of how automation technologies proliferate within concentrated world-historical sites invested in organizing space and time in ways congruent with the accumulation of capital and articulation of geopolitical power.

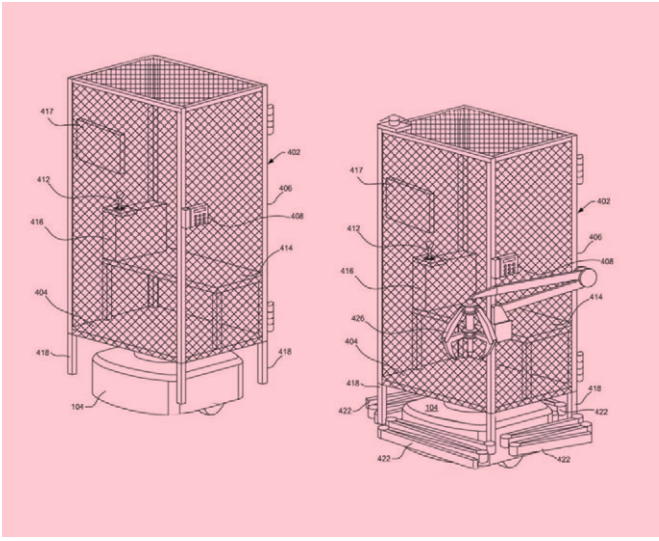
ANTICIPATORY ENVIRONMENTS

Environments comprise radical new forms of governmentality, generating new epistemological grammars coextensive with their territories of operation. The logistical facility of the warehouse, for example, is at once an environment that experiments with automation technologies designed to

manage storage, distribution, and labour practices. And it is also a testbed that envisions how environments might work in more expansive ways as a management system that organizes, coordinates, and assigns inputs and outputs in the governance of signals to produce parametric horizons that optimize the engineering of life.

Patents offer a point of entry into the exploratory design of automated warehousing environments. Much industry reporting and academic study has been done on Kiva Technologies patent for robotic transport devices able to move heavy stacks around warehouse settings [Fig. 1]. Acquired by Amazon in 2012, the initial idea of a mobile inventory stacks was further developed to include a metal cage for workers with additional robotic extensions able to expand the repertoire of human-machine tasks. The patent imaginary of a world of highly constrained and controlled zones decouples the human-machine relation, syncopated in time, and constantly circulating. It is the vision of a new zonal structure that facilitates circulation and enclosure simultaneously. In lieu

[Fig.1] Patent for robot (Kiva inspired) carried mobile cages for workers to keep them safe when transported through robotic zones of procurement centres titled "System and method for transporting personnel within an active workspace" granted March, 2016 US Patent office, filed by Amazon. https://patents.google.com/patent/US20150066283?oq=20150066283+A1



of current border security logics such imaginaries register the seeming surreal excess of a world that envisions alienated and dispossessed workers literally caged yet still managing to execute necessary functions in the factory.

These new temporal zonal logics are replicated in efforts to make seemingly industrial and inflexible infrastructures such as rail lines assume more plastic capacities. Splicing fulfillment centres with logistical supply chains, another of Amazon's patents filed in 2017 for intermodal vehicles embraces elements from the genre of science fiction film in its repertoire of patents on anticipatory shipping [Fig. 2].

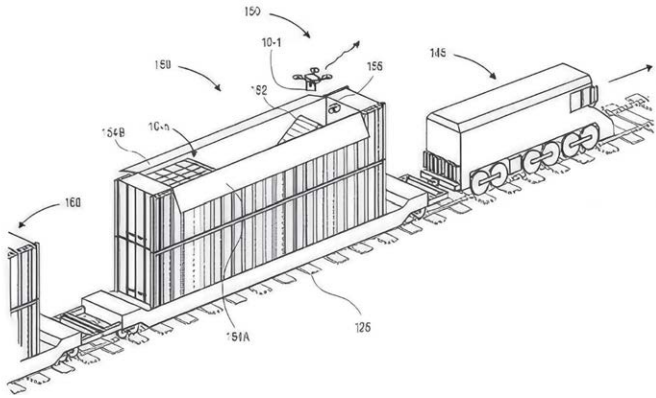
Dependent on existing rail transportation infrastructure, a core premise behind this patent rests on the reproduction and reinforcement of established patterns and demographics of consumption. This is not a case of a "rail to nowhere," to recast a well-known Talking Heads song, but precisely the opposite where customer purchase histories determine the deployment of intermodal vehicles loaded with inventory targeted to fulfil already

acquired habits of consumption and cultures of taste. At this basic level, the relation between production and consumption is already automated independent of technical operations pertaining to machine learning or artificial intelligence. Once these additional technologies of automation are enlisted into the diagram of logistics, new kinds of environments and epistemological universes are produced. Patents of this kind also register the articulation between environment, epistemology, and geopolitics specific to the technical logics of automated worlds.

AUTOMATING GEOPOLITICS

How is geopolitics automated? By technical systems, computational processes, and infrastructural components coupled with policy agendas and economic targets designed to obtain hegemony through the production of territory. The spatialities of power generated by machinic operations may reinforce and extend more conventional techniques of geopolitics staged in the theatre of inter-state contest between civilizational cultures articulated

[Fig. 2] Ground-Based Mobile Maintenance Facilities for Unmanned Aerial Vehicles, US9718564B1, filed March 16, 2017.



through Cold War disciplinary legacies of international relations and area studies. More likely, however, the automation of geopolitics results in novel territorial configurations not easily subsumed by the geopolitics of inter-state rivalry. Even less so by the neo-Darwinian and racist logics of species-being promulgated by area studies. Indeed, the automation of geopolitics is accompanied and conditioned by the geopolitics of automation. Where the former consists of the machinic production of territory, the latter involves state actors recalibrated by the struggle to determine the standards, protocols, financial, and operational logic of machines. When geopolitics are automated, machines take command.

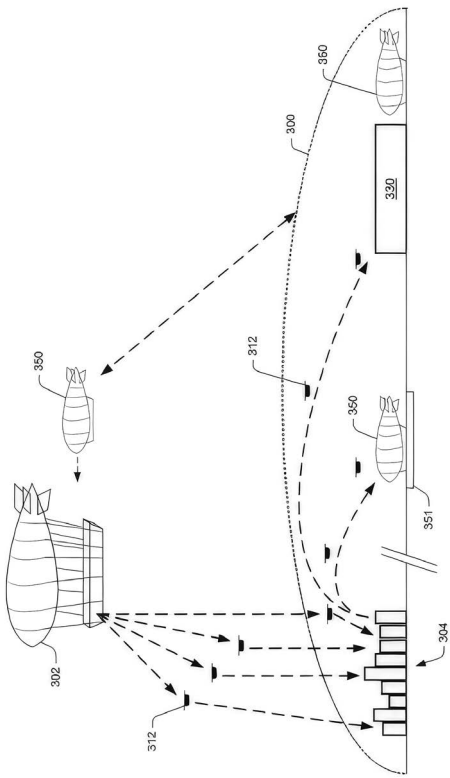
Such command cannot be thought of in terms of Cold War control or dominion over stable territories. Amazon patents reveal that the new conception of the procurement zone will be mobile and aerial. As much as this remains to be seen, such imaginaries articulate a future capable of producing domains and territories through service and accessibility to consumption rather than around other categories of citizenship

or real estate. Nowhere might this be made more evident than in the exemplar of new forms of roving territory envisioned by Amazon [Fig. 3].

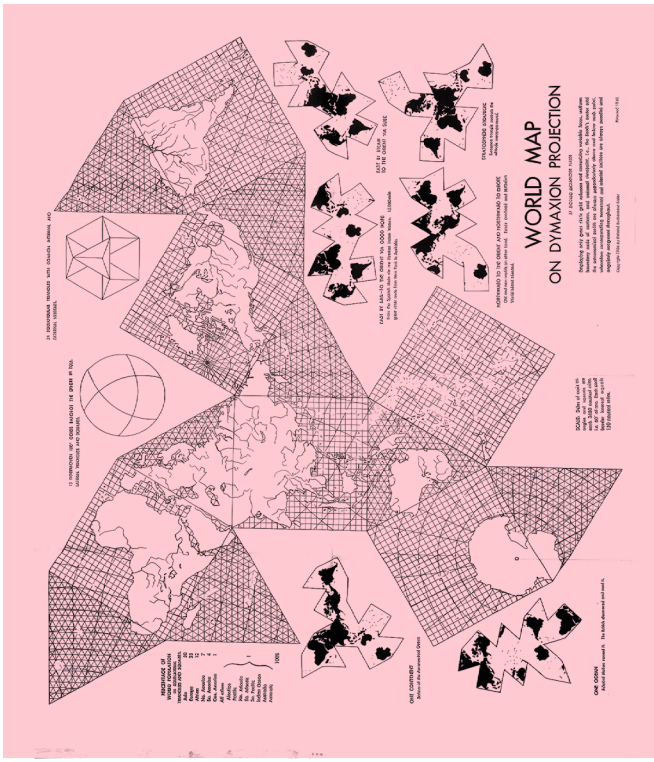
In this patent, procurement centres are airborne and capable of entering new locations, offering more targeted services through the use of drones and a capacity to transport the space of fulfillment. This strategy of mobile zones is related to new forms of warfare with other corporations. Aerial control had been the linchpin of war and geopolitics in the twentieth century, the first frontier where pilots were treated as machines.

The original vision first recognized by Buckminster Fuller of a world whose cartography was organized through the logistics of aerial warfare [Fig. 4]. The previous Amazon images even look like aerial warfare. Fuller's map is of the world as seen from airplanes rather than other vantage points. This world can be reorganized and reconstituted at will. The logistical and mechanical vision first recognized in 1944 might finally have been realized. But no longer, however, in the service of the racial and geographical orders of the nation-state.

[Fig. 3] Airborne fulfillment center utilizing unmanned aerial vehicles for item delivery, US9305280B1, 2014. https://patents.google.com/patent/US9305280B1/en



[Fig. 4] Buckminster Fuller's Dymaxion Map. Patented January 29, 1946. No. 2,393,676. https://bostonraremaps.com/inventory/buckminster-fuller-dymaxion-map



Nowadays, contests of power amongst the world's hegemons instead play out in the ordering of space and time by infrastructural settings with potential for global interconnection facilitated by communication technologies and financial architectures.

The battle around the technological management of warehousing and logistics industries between Amazon and Alibaba serves as a case in point of this transformation. The dance of artificial intelligence and machine learning technologies in warehousing facilities specific to these two state affiliated, global companies bears witness to the ways in which the geopolitics of automation exert pressure on labour in the process of accumulating revenue from the traffic in commerce. Amazon is well known for its pursuit of a business strategy of total organizational and logistical control with vertical integration of their platform all the way from sales, storage, services, subscriptions, and distribution up until the last mile.

By contrast, the Chinese tech behemoth Alibaba prefers to enlist third parties to horizontally expand its range

of data-driven services that include real-time micro-credit and financial loans, inventory management, consumer profiling, search rankings as well as logistics and warehousing. While Amazon and Alibaba hold complex and quite different relations to organs of the state (for instance, the former piggybacks on US Postal Service infrastructure while the latter is at once protected by and at the mercy of crack decisions in Beijing), both companies are in the game of market domination. Where they differ is in how territories—and thus corridors of data, supply chain traffic, and labour power—are produced through technical operations and infrastructural systems.

The production of time and space, subjectivity and sales specific to automated processes of decision-making registers new forms of geopolitical power that at once unsettles and intersects with the sovereign authority of the state. The new capillaries of control generated by this constellation of forces are not immune to intervention and destabilization. This reconfiguration of older biopolitics might suggest a new form of emergent governance that might

also be more attuned to its materialities and agents, even as they serve as forms of volatility. Take, for example Covid-19, which so clearly forced a reconsideration of the smooth space on the planet, and an encounter with the biological materiality of human life. Such is the revenge of the world.

DESIGNING EPISTEMES

Network cultures infused with dopamine addiction spawn a thousand tiny memes in the mass cultivation of banality. But a meme is not an episteme. Can we think in slightly more compelling horizons where something might actually be at stake? Can intelligence work in and alongside and against the over-determining tendencies of AI unleashed onto the world? Does the agglomeration of data, its processing and analysis result in computationally defined parameters that enframe how world situations are understood more generally? Can we discern a design logic that informs and indeed produces computational rationalities spawned by automation technologies? Indeed, might machine learning and AI processes in the logistical facility of the warehouse

register the emergence of epistemic planes of operation that calibrate society as if it were inventory to assign, distribute, and exchange? Such would be the horror of a world-as-warehouse.

If the patent anticipates futurity as property filed in the present, how might patent analysis generate critical cartographies of geopolitics tied to knowledge regimes specific to machinic routines? Or perhaps even suggest that we must escape the tyranny of geopolitics; a possibility that might open to new forms of political action and affiliation. Epistemic conditions are tied to industrial technical objects. Suffice to say that semantic classification systems of patents and the sort of parameters that attend patent archives invite and indeed support a critical practice of "distant reading." Closely associated with the work of literary historian Franco Moretti, and adopted as a method in digital humanities, distant reading lends itself to analysis predicted on statistical tendencies from a corpus of data. In the case of online patent archives, we start to see the composition of the research landscape in computational science

in terms of institutional affiliations, knowledge concentrations and geographic distribution. Such patterns tell us not so much about the geopolitics of automation but rather the geoeconomics and political economy of research in the field. The diagram of knowledge coincident with such relations has substantive implications for research and development in the automation technology industries. An episteme of automation is produced.

OPTIMIZING SUBTRACTION

Extraction has become a new form of optimization in the context of artificial intelligence and machine learning systems. Standard historical narratives of capitalism describe how just-in-case modes of production, which were oriented around inventory management in anticipation of market demand, contingency and subsequent problems of supply, shifted around the 1970s to flexible production and just-in-time modes of capital accumulation associated with Toyotism and post-Fordism. The advent of the Coronavirus sweeping across the world in early 2020 coincided with an industrial

and manufacturing discourse tied to a resurgent politics of renationalizing the economy in many countries that previously were flag bearers of economic liberalization. The US during the first Trump administration was, of course, chief among those promulgating such discourses, even if they didn't always match the reality of business as usual. While the infrastructural impact of global supply chains struggling to keep up with consumer demand coupled with pressures across many sectors to maintain levels of production has, arguably, had greater impact on countries having to renationalize production in a range of industries, we nonetheless can see how new logics of scarcity play out in the production of commodity objects—those reliant on computer chips and the supply of rare earths are most frequently cited in news media reports.

The spatial and temporal models of capitalist production seem to be shifting toward a new logic of subtraction. Patent technologies are acts of future making; they are a form of predictive analytics. What is clear is that the new AI, digital twinning,

machine learning, and smart technologies are the fantasized modes of managing the situation of anticipation and even turning it into a business opportunity. Optimization obtained through the reduction of component parts, single object fabrication, and molecular modification reduces complexity of global supply chains. Structural logics of monopoly control are enhanced with simplified manufacturing processes, yet complicated by distributed modes and technologies of production. Cultural and industrial imaginaries of AI valorize optimization but to a new end, balancing the minimal-maximal relation between just-in-time (convenience) and just-in-case (resilience), and optimizing subtraction and derivation of value from existing and always reduced infrastructures and labour.

What does this mean in environments of subtraction? Does durability re-emerge as a feature of commodity production tied, now, to optimizing economies within new global policy agendas surrounding sustainability? The industrial logic of capitalism's built in obsolescence corresponded with

existential notions of finitude, limit and death. Do operative logics of AI and machine learning transcend these kinds of horizons? And how do they manifest or play out in the industrial setting of the warehouse? Our mapping suggests that AI plays a critical role in turning these seemingly impossible situations into frontiers to capture for testing technological systems that support capital accumulation.

DATABASE IMAGINARIES

To the extent that patents are blueprints of failure, of proprietary claims on futurity that never arrives, we nonetheless have to reconcile this analytical recognition with the world-making power of designs that sketch out action predicated on profit. This is certainly the case with the class of automation patents filed with commercial aspirations or territory marking motivations. As much as the imaginary and legal purpose of patents is to index modes of invention, we find more often than not the patent form signals innovation at rock bottom. A skeletal design aesthetic, the shift



Photo by Ned Rossiter, 2025



Photo by Ned Rossiter, 2020

of a line here or there, an additional diagram or sketch, a minor variation in notation—these are the primary elements that supposedly constitute innovation. Undoubtedly the coding of automation as a patent is a legal declaration of innovation. But claims to originality end there.

As a knowledge domain more often populated by inventors, developers, legal scholars, and a tech-sector intent on staking out claims on possible futures, what might patents and their associated apparatuses offer as an object of study that opens some alternative methods to address the question of contemporary globalization and emergent geopolitics? Indeed, how might we analyze patent datasets? What, for example, is the logic of operation specific to patent systems? What sort of query terms in patent databases are best suited to help diagram the relation, for instance, between encoding techniques and epistemic horizons? Analyzing citation networks starts to illuminate a political economic geography of institutions, patent offices, firms, and perhaps even geopolitical interests. How, finally, do such technical

systems bear upon the production and governance of territory, if at all?

Through the grammar of search, such patterns of aggregated data on patents offer computationally derived accounts of geoeconomics and political economy of intellectual property regimes categorized by nation, firm, and industrial sector. The graphs we see in Kynan Tan's patent analysis of Google BigQuery in this book register how search databases structure realities internal to their terms. The diagram of knowledge immanent to such database logics has implications for research and development in the automation technology industries. An episteme of automation is produced. And it is produced automatically within the computational system of the database. Search terms entered into patent databases verify automation as a logistical component in an epistemic horizon.

While it is difficult to discern whether these technologies are existing or will ever be developed, the rush to patent certain expressions of innovation reinforces their competitive significance. Indeed, the activity of patenting itself becomes its own raison d'être.

Companies seeking funding or symbolic assertion of technological superiority often list the number of patents as evidence of leadership in the field. This patent excess poses challenges for critical researchers. The database imaginary of automation technologies, patents, and warehouses should not be interpreted or read as correlating to actually existing material realities external to the imaginary conjured within the database universe. Appealing and indeed compelling as such an interpretation may be, the fallacy of correlation is now well established as a trope within critical studies of algorithmic governance (boyd and Crawford, Rouvroy).

Patents are about managing futures and territories. Every patent filing contributes to the incremental expansion of the dataset on automation technologies figured as a legal device. Corporations file patents for possible lawsuits against other corporations and to forestall the development or competition in a particular field. Patents are also about colonizing new industries and territories. Accounted for in tables and graphs generated within

databases such as Google BigQuery, patents on automation register as rapid expansion over time across a range of industrial sectors. A story is implicit in the non-narrative forms of tables and graphs. From these most dreary cultural techniques, we conjure factoids on the encroachment of automation into service sectors, transportation and logistics, car manufacturing, and the like. Geopolitics is tabulated in numerical form where the volume of patents filed shifts according to the parameters of search. Hierarchical lists of countries symbolize hegemonic power and market dominance. Top ranking countries rise and fall depending on search query terms. The same goes for companies. The sum total of such exercises demonstrates the power of ideology encoded in technology. The seeming arbitrariness of searches and changing players suggest that power is arbitrary. Nothing could be further from the truth.

PARAMETRIC POLITICS

Parametric design determines terms of search, which draw on aggregated

datasets, which determine rankings. Critique is a "next level" activity. Grafted to machinic outputs, patent critique necessarily reckons with the politics of parametric design. Parametric politics are a politics of programming that sets limits to action. Patents are part of this. They are designs of performance, of rules about how things act or might act in the world. Patents are determined by a combination of political economic imperatives, profit maximization, and speculative capital. When initiating patent analysis from a geopolitical and logistical perspective, we might ask what can a thing do, and how much can that promise of performance be hyped? How does the agglomeration of patents grouped across national and organizational scales suggest geoeconomic performance in the world? These are the sort of questions elicited by charts generated within databases such as Google BigQuery, which in themselves are best understood as aesthetic performances with an idiom of metrics and models than they are registrations of an actually existing empirical world. The referent, in other words, is immanent to the logic of the system. Yet its

performativity capacity has potential to extend into and indeed make worlds, markets, and economies. The spatial scope of these performances registers a geopolitical and geoeconomic aesthetic specific to the idiom of representation.

Patents demonstrate how tensions inherent to capitalism—bordering and circulation, globalization and nationalization, and above all limits to resources and endless economic growth—are managed through database systems as artefacts contained within a logistical episteme. If patents are among the legal instruments that reinforce logics of capital, then they are accompanied by logistical strategies for managing populations. To the extent that patents govern innovation, we can also say that material conditions and political economic realities catalyze technological invention provisionally secured in the legal form of patents.

Within the logistical episteme, data processing and analytics, automation technologies, and artificial intelligence systems are restructuring life itself. As a trans-spatial apparatus of incorporation, global logistics similarly operates

across informal and formal systems and practices of governance and coordination. Yet, contingency frequently prevails, manifesting as feedback loops of disruption, labour strikes, rerouting of supply chains, inventory blowout or undersupply, and the like. As much as patent technologies define a juridical horizon of capture and control, they also offer diagrammatic insights into how forms of speculation—both financial and imaginary—condition geopolitical and geoeconomic contours of contemporary capitalism. In this way, combining patent analysis with logistical investigation enables a critical reading of geopolitics and capital from within the horizon of the logistical episteme.

Photo by Ned Rossiter, 2025



01.4

CRITICAL PATENT ANALYSIS: DEFINITION,APPLICATION, AND POSITIONING

Lungani Hlongwa

Critical patent analysis is an effective tool for deconstructing the often opaque technological structures of algorithms, digital platforms, and so-called smart cities. A basic understanding of patents is essential before any engagement with this powerful method of analysis.

WHAT IS CRITICAL PATENT ANALYSIS?

A patent is a legal document issued by states or regional bodies to an inventor, granting them exclusive rights over their inventions for a certain period. These rights are conferred on the condition that the invention is new, non-obvious, and useful, making patents the most technically granular record of emerging technologies in the public domain. Putatively, the goal of granting a patent is to encourage innovation by allowing inventors to reap the benefits of their work. This, however, continues to be debated as some hold the opposite view—that patents stifle innovation by drawing borders on knowledge.

Structurally, a patent document comprises a title, an abstract, detailed claims about the invention, drawings, and

a description section. The claims section is the most legally consequential, defining the precise boundaries of the protected invention. Documents also include filing and grant dates, inventors' names, assignees, classification codes, and citations to prior art. Systematically analyzed, this architecture of information can map innovation strategies, technological competition among firms, or even the trajectory of technological development in a specific industry. Technical patent analysis is thus widely employed across business and technology sectors.

Critical patent analysis treats patents and their holders as socially embedded entities rather than neutral technical entities. Where conventional patent analysis asks what an invention does, Critical patent analysis asks why it exists, interrogating the ideologies, political economies, and power relations embedded in technological design. This orientation is not without precedent, as scholars working across science and technology studies, political economy, and critical legal theory have examined patents through related lenses. What Critical patent analysis offers is a

systematic framework that consolidates these approaches, functioning both as a research tool and an epistemic stance. Critical patent analysis refuses to separate technological innovation from the social conditions of its production and the inequalities its deployment may entrench or accelerate.

Drawing extensively from traditional technical patent analysis, Critical patent analysis operates across two analytical scales. At the macro level, large patent corpora are examined to identify broader trends, emerging fields of innovation, and shifts in the geographical and technological landscape of intellectual property. This approach is crucial to discerning strategic narratives and directional patterns in how technology develops and where power accumulates. At the micro-level, individual patents are subjected to close reading with attention to both technical specifics and the socio-political circumstances of their production. This careful examination surfaces the unique characteristics and implications of each patent but also serves to either corroborate or question the macro-level

findings. Depending on the research objectives, any element of the patent document may become analytically significant, including technology classification codes, legal claims, and technical drawings.

CRITICAL PATENT ANALYSIS IN PRACTICE

In my earlier work examining the algorithmically regimented city, critical patent analysis was deployed to identify the key actors shaping urban algorithmic systems, the technologies they were developing, their likely evolutionary trajectories, and the underlying logic driving their inventors. The analysis yielded two significant findings. First, it brought the concept of algorithmic governmentality into focus, highlighting the use of big data analysis to predict and shape user behaviour across interconnected stages of data collection, processing, and application. Second, critical patent analysis disclosed the topology of the algorithmic city as a complex network of mutually constitutive elements: users, devices, sensors, databases, platforms, and geography.

The user element, consisting of desubjectified individuals, highlights how personal desires, preferences, and behaviours are quantified and manipulated. Devices and sensors function as the interface layer, translating human interactions into machine-readable data, which databases then store and algorithms mine. Platforms are built from this extracted data, generating value while simultaneously defining user identities and roles. Geography grounds the whole topology in the physical world, demonstrating how algorithmic power is not abstract but actively shapes real spaces and lived experiences. Taken together these findings establish critical patent analysis as a useful method for understanding technological development in its social context and for tracing the reach of algorithmic power into urban life.

A second study employing critical patent analysis examined the ride-hailing platforms Uber and Lyft, contributing to an inquiry organized by Into the Black Box, a collective research initiative exploring logistics, spaces, and labor. The analysis focused on how these platforms shape labour conditions and recruit

users as extensions of their operational infrastructures. Critical patent analysis uncovered patents for inventions aimed at monitoring drivers, delegating tasks to users, and implementing algorithmic management. While discrepancies between patented technologies and actual practices are always possible, this study found a notable congruence between the patent record and the experiences reported by workers and users. These findings are corroborated by existing literature drawing on worker interviews and ethnographic studies. This alignment strengthens the case for critical patent analysis as a method capable of disclosing the operational logic of platforms before it becomes visible through other means.

A third study employing critical patent analysis examined the operational logics of Facebook by analyzing how the platform's inventors envision sociality through their patent filings. The analysis revealed that Facebook's patents reflect a coherent and troubling vision of human interaction, one organized around data extraction, surveillance, and algorithmic manipulation rather than genuine connection. This vision materializes

through patented technologies that shape user experience while carrying broader implications for the nature of social engagement and privacy. The study, developed under the rubric of "Patenting Sociality," demonstrates how digital platforms do not merely mediate social relations but actively construct them, and in doing so, stake claims to ownership over social processes themselves.

While the analytical utility of critical patent analysis is evident in its widening adoption, no method is without its challenges and limitations. A central difficulty lies in bridging the dense technical language of patent documents and their broader social implications. This requires not merely technical literacy but the capacity to move fluently between engineering specifics and social theory, interpreting patented inventions in ways that are analytically meaningful beyond their immediate technical context.

A further complexity lies in the nature of patents themselves. Not all patents represent technologies that will be implemented. Many are filed for strategic purposes, ring-fencing core technologies or staking competitive ground

rather than signaling genuine innovation. Distinguishing between these categories ideally requires access to internal company information that is rarely available to external researchers. This opacity is a real constraint, but it does not undermine critical patent analysis so much as define the conditions of its use, demanding interpretive caution and transparency about what the patent record can and cannot disclose. It also makes a strong case for combining critical patent analysis with complementary methods such as ethnographic research, worker testimony, or platform audits, allowing patent data to be tested against lived experience and other forms of evidence.

The studies discussed here combine macro and micro analytical scales, beginning with large patent corpora to map broader trends in technological development before moving to close readings of individual patents to examine how specific technologies function and connect to social questions. This sequencing is one approach among several.

Critical patent analysis is a methodologically open framework that accommodates significant variation

in design and focus. Patent drawings, for instance, offer a visual archive of technological imagination and can serve as a primary data source in their own right. Discourse analysis of patent texts can illuminate how inventors narrate and justify innovation in social terms. Qualitative interviews with inventors or assignees can surface the intentions, expectations, and contingencies behind particular filings. Interdisciplinary collaboration across sociology, economics, environmental studies, law, or art and design can bring additional interpretive resources to bear on the patent record. This flexibility is a methodological strength, though it places a corresponding obligation on researchers to ground their analytical choices in explicit theoretical frameworks rather than treating critical patent analysis as an end in its own right.

POSITIONING CRITICAL PATENT ANALYSIS

Critical patent analysis sits within the broad framework of emancipatory technology studies, which is not a discrete field but an orientation that

draws on critical theory, science and technology studies, and the critical sociology of work. Emancipatory technology studies examines the socio-economic and political conditions shaping technological development, actively supports democratic and sustainable technological alternatives, and involves in the production of knowledge those actors most subject to technological domination. Critical patent analysis operates within this tradition by treating the patent system not as a neutral mechanism for rewarding innovation but as a terrain of power upon which the logics of capital, control, and enclosure are encoded in technical form. Situating critical patent analysis within emancipatory technology studies is not merely a classificatory gesture; it clarifies the stakes of the method and its commitment to analysis that is accountable to those whose labour and sociality are shaped by the technologies it examines.

What is needed is a shared framework that consolidates these dispersed but interconnected efforts to make critical patent analysis legible, facilitate collaboration across disciplines,

and give researchers working in this space a common point of reference. Such a framework does not fabricate a new field so much as name one that already exists in practice. Critical patent analysis, as defined and demonstrated here, provides this consolidating framework. It offers a recognizable label for a body of work that treats patents as socially embedded objects of critical inquiry, and a foundation from which more systematic and collaborative research can develop.



Photo by Ned Rossiter, 2025



Photo by Ned Rossiter, 2024

01.5

THE PATENT BIAS: NOTES ON "NOTES ON GESTURE" AND BIAS AS A SOMATECHNIC

Christopher O'Neill

Laid up in hospital in New York in 1926, the French anthropologist Marcel Mauss famously made note of a certain way in which his nurses were walking while they did their daily rounds. It reminded him of something. Of what? It hit him: of the way that women walk in the movies. They walked like this on the backlots of Hollywood. And now they walked like this in New York. And when he got home to Paris, he realised that women were walking like that there as well. A certain shared gait had taken hold of women the world over, it seemed. The cinema, Mauss concluded, had somehow or other synchronised a new kind of womanly walk. "This was an idea I could generalize," he would later write—it is the genesis of the very concept of "techniques of the body," the notion that the analysis of gesture itself can unveil something essential about the society that produced it.

Somewhat surprisingly in his description of this most essential and generative bodily technique, Mauss is a bit vague on the specifics of both the walk and the mechanism of synchronization. He has a lot to say about other techniques of

the body—he is quite precise about the different ways that English and French soldiers marched in the first world war, for example, and the way that different shovel specifications organized different techniques and different cultures of digging. But he remains a bit vague about what exactly it was that was shared between the gait of American and French women, or what exactly the cinema had to do with it. Still, the implication seems clear enough—that a part, maybe the fundamental part, of the cultural hegemony of the American cinema machine was its colonization of the most intimate and fundamental gestures of the (female) body.

The thesis dialectically anticipates Giorgio Agamben's argument fifty years later in his "Notes on Gesture" (2007). For Agamben, the scientific proto-cinematic motion studies of Eadweard Muybridge and Étienne-Jules Marey had dominated and disintegrated the integrity of the pre-modern gesture, and it was the promise of the cinema itself to "lead images back into the realm of gesture." It is the cinematic apparatus that makes Mauss' gaze possible, which produces

the possibility of a "technique of the body" as something that could be disarticulated from the body itself, as well as something which might be apprehended as generalizable. It is, per Agamben, the essential politico-ethical "task" of the cinema to reunite this shattered integrity.

It would seem, then, that what Mauss was observing in his nurses' walk was as much a new walk as it was a new way (for men) to watch women walk. Do Mauss' "techniques of the body" essentially describe only a barely comprehending phenomenology of the male gaze—with Mauss, bandaged and helpless, prefiguring the pathetic, rapt attention of Jimmy Stewart in Hitchcock's Rear Window (1954)? This would explain both Mauss' conviction that he was seeing something (in the nouveau pas of his nurses) as well as his remarkable lack of precision in describing what he was actually looking at. Pas un nouveau pas, mais un "new look." What is synchronized is not the gait, but the gaze ... and the danger of this synchronization is that pernicious deskilling that ergonomists warn us is the correlate of "automation bias."

Mauss' account is incomplete. He is seeing something, but there is something that eludes his gaze. If women were walking differently in Paris and in New York then surely this new walk was overdetermined? Perhaps it is less to the cinema per se that we might turn to explain Mauss' observations, and more to a different, though certainly entwined, technology of the body. Specifically I think we can look to the significance of the bias cut, and to the role of its patenting within the new consumer economy of women's fashion. The difference between walking the walk and Mauss' scopic attention to the walk becomes legible here, even if enmeshed within an antagonistic unity.

The bias cut is the essential gesture of modern women's fashion and the key technique in the "conquest of movement" (Charlotte Delory) incorporated by fashion in the interbellum years of the twenties and thirties. It was invented, or rather mastered and generalized, by the couturier Madeleine Vionnet in her Paris studio in the late 1910s and early twenties, and quickly became a global

sensation. What does it mean to work with the "bias" of the fabric? Bias can be considered a kind of second-order technique that emerges from the primary technique of textile weaving. Textiles woven on a loom have two basic components—the vertical warp thread, and the horizontal weft. Garments cut on the straight grain of these threads will retain the stability and stiffness of the weave itself. Bias is the "airspace" (Betty Kirke) between the warp and the weft, and Vionnet's innovation was to discover the new properties which emerged when fabric was either cut or folded on the 45-degree diagonal across the two threads. Before the emergence of properly elasticized fabrics, working with the bias unveiled the astounding capacity of fabric to stretch and drape and to cling to and move with the torso, as though organized by the liquefaction of the body itself. Inspired by both Classical sculpture and the manifestos of the Futurists, Vionnet understood her own work as the achievement of an equivalence between the form and the adornment of the body, insisting that "the couturier should be a geometrician,

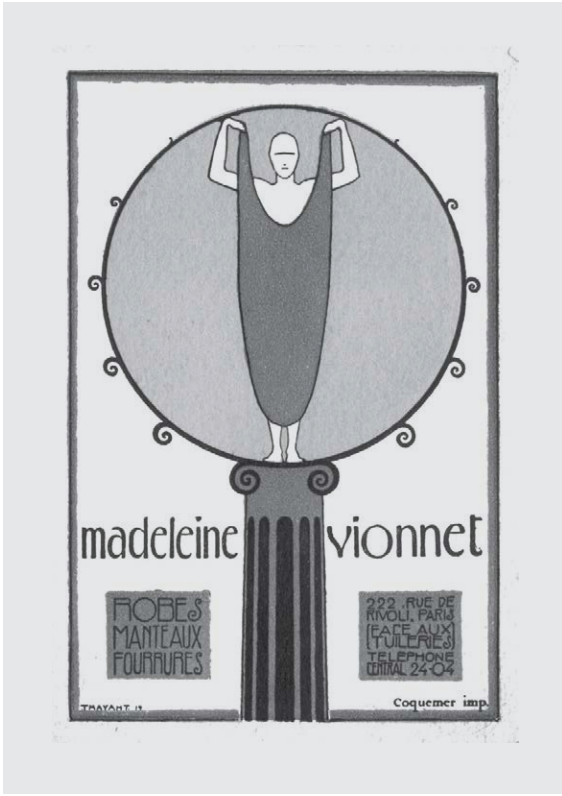
for the human body makes geometrical figures to which the materials should correspond."

It is in this dialectic of the sensual and the geometric that we can situate Vionnet within the same somatic episteme Agamben apprehends in his "Notes". As Walter Benjamin observes in The Arcades Project, women's fashion had since the late nineteenth century become increasingly energized by the possibilities of sportswear and the vita activa. In his estimation modern fashion could be summed up precisely as the fraught exchange between the body and the inorganic, between "frivolity and death," between the endless renewal of life and the airless domination of the commodity form. Vionnet represents the pinnacle of this relation in a number of senses. Firstly because her undisputed mastery as a technician and a designer served to enshrine the "freedom" and the integrity of the woman's body as the highest ideal of haute couture, with such exquisite expression and achievement as to inspire not only her contemporaries but every succeeding generation of master dressmakers, from Cristobal Balenciaga

through Roy Halston, to Issey Miyake, Azzedine Alaïa, and John Galliano. But Vionnet was also exemplary because she was not only a pioneering designer but also a pioneer of the formalization of copyright and intellectual property.

Vionnet had in fact received her training as a young woman in the London house of Kate Reilly, who specialized in making copies of the exclusive Parisian fashions of the 1890s for an eager if deprived English market. Despite or because of this, when her own house attained success Vionnet became notorious for her desire to protect her own creations from unlicensed reproductions. In 1921 she established the Association pour la Défense des Arts Plastiques et Appliqués (Association for the Defence of Fine and Applied Arts) and in 1929 the Association pour la Protection des Industries Artistiques Saisonnières (Association for the Protection of Seasonal Art Industries). These industry groups lobbied to protect French haute couture from illegal copying both at home and abroad. Vionnet lodged designs and photographs of her works with the Conseil des Prud'hommes de la

[Fig. 1] Logo for Vionnet's Salon, designed by Thayaht, ca. 1912–1914, CC BY 2.0 via Wikimedia Commons.



Seine, and also "signed" each label of her dresses with both an embroidered signature and an ink print of her right thumb—in all likelihood the first use of a "biometric" ID to trace and guarantee authenticity. In 1921 Vionnet won two stunning legal successes in the Twelfth Chamber of the Small Crimes court of the Seine, proving through the use of her lodged designs that two houses, that of Henriette Boudreaux and that of the Miler Sisters, had each confected and sold either outright copies or slightly modified Vionnet designs from their ateliers. This victory stood as an important test case in establishing protections for fashion design under French law, and also secured the integrity of Vionnet's intellectual property as she was preparing to expand into the already massive American market. In 1924 Vionnet established an exclusive deal with the New York based firm Hickson Inc. for licensed manufacture of her designs in the company's headquarters on Fifth Avenue, and seemed set to capitalize upon the mania for the bias which her work had already aroused amongst American women.

This success would, however, be thwarted by several factors. While the appeal of Vionnet's designs was in the way they sloughed off the suffocating artifice of the pre-modern silhouette, her dresses were nevertheless exceptionally complex and elaborate constructions. The American licensees simply found the pieces too complex to reproduce, even with the aid of detailed designs and copies of the garments themselves. Vionnet was ultimately required to supply the American market from her own atelier. But her refusal to compromise her designs to simplify and accelerate manufacture meant that she was unable to reduce her overheads sufficiently to turn a profit doing so. Meanwhile, the market for (less technically accomplished) copies or for otherwise "Vionnet-inspired" garments ran riot in both France and the US. By 1931 the New York Times could report that variations of her work had "now spread to prairie towns and the smallest city dressmakers" (Véronique Pouillard). Of course, given Vionnet's inability to satisfy even the constrained "licensed" market for her garments, the enforcement of her intellectual property had become

moot. Following the deprivations of the Great Depression, Vionnet would declare a sense of creative exhaustion and in 1940 closed forever the doors of her House on the Avenue Montaigne.

Obviously the nurses who fascinated Mauss were not gliding around the wards in Vionnet's rippling crêpe de Chine. However, the influence of Vionnet's bias cut on American designers, both of formal wear as well as sportswear and practical garments like nursing uniforms, cannot be overstated. There was a "there" there in Mauss' observation, but even the archetypal thinker of body techniques could not move beyond the typical ignorance with which the male anthropologist encounters the dazzling habitus of womenswear.

Two somatechnics are confronted here—the serialization and synchronization of the gait in the cinema, and its supple "framing" and expression in the designs of Vionnet and her many imitators. But between looking at the walk and walking the walk there is a destabilizing third movement—patenting the walk! If the great designer had had her way then we would indeed be deprived of our gestures.

The whirls of the body's geometries would be totally stamped beneath the whorls of Vionnet's right thumb. That she failed reflects an ironic desynchronization, the inability of both her productive capacity, her legal imagination, and the IP form to "keep up" with the very demand it was meant to secure. Today it is not Vionnet but her competitor Coco Chanel who is a household name—Chanel, who never joined Vionnet's industry associations, who cheerfully regarded imitation as flattery, and who made a vast fortune on easily "massified" perfumes and cosmetics.

Nevertheless, it is Vionnet's will to patent the body's gesture—what we can call her patent bias—which seems to most prefigure our contemporary politics of automated enclosure. Now the swipe, the pick, the stow, and indeed the step are modelled and programmed and patented in the smart analytics which preside over the so-called "chaotic storage" systems of the Amazon warehouse (Alessandro Delfanti). Does Vionnet's failure to patent bias itself offer us any cause for optimism about the limits of this project? Perhaps it is not the integrity but the contingency of the body which the patent bias

unveils. The "closer" that somatechnics hew to the "truth" of the body and its geometries, the more profound the contradiction that emerges between the body's vital order and the project of its commodification and mortification. In Cultural Techniques of Biosensing: A History of the Body in Error (2026), I describe the modern body as being one which is "in error," ever barred from the long promised and (apparently much desired) coincidence with its measure and its representation. Rather than lamenting with Agamben the loss of some gestural essence, it is perhaps within the space produced by the failure of modernity's somatechnics that we can apprehend the grounds for a contemporary technopolitics of the patent form.

(With thanks to Jessica Marian)

02

02.1

CORRIDORS

Maren Koehler &
Ned Rossiter

CORRIDORS DECIDE

Corridors optimize economy through efficiency. Corridors strive to conquer time by channeling movement within spatial constraints. Corridors connect zones. Corridors bundle infrastructure along axes to narrow space and accelerate time. Corridors open channels or pipelines of movement that intensify logistical organization and its accompanying tensions and conflicts. Stable regulations, well-developed communications, efficient transport systems, and uniform software implementations are the basic requirements for establishing corridors. Yet corridors cross borders and negotiate variegated conditions of capitalism. Corridors string governance across gaps of knowledge and undulations in topography. Power vacates the office. Decisions are made in the corridor.

From the architectural design standards of hot and cold aisles in data centres separating airflows to the dredging of ports for the unidirectional passage of post-Panamax ships circumnavigating the globe, the accumulation of capital is held together in heterogeneous ways by corridors. Global logistics industries are

underscored by managerial visions and technical processes of interoperability, yet the material manifestation of corridors points also to multiple fonts of incommensurability. A paradox emerges between the logistical imaginary of interlocking circuits of supply-chain capitalism and the material instantiation of conflict and divergence manifest within the logistical form of corridors. Corridors stretch across a range of scales with discrete logics of governance special to logistical operations and technical systems. Charting a typology of corridor forms, this short catalog of entries probes the corridor as a complex of contours enmeshed with historical conditions and geopolitical dynamics.

HARMONIZING IMPERIALISM

Infrastructure makes worlds, logistics governs them. The political economy and design logics of standards and protocols operationalize infrastructural plans. Corridors supply a connective tissue across the world's variegated and frequently incommensurable social spaces and cultural systems. To the

extent that infrastructure harmonizes differences, social discontent lurks in the shadows, awaiting its stealth-like moment of revenge. Hu Jintao's reign as General Secretary and President of the Chinese Communist Party was marked ideologically by a neo-Confucian governmental strategy of a "Harmonious Society" in an attempt to counterbalance the rise of social injustice and inequality wrought by rampant industrialization and rapid economic transformation. The rule of harmony was accompanied by ramped-up censorship and Internet surveillance, spawning the net-cultural meme of the "river crab" as a euphemism for and joke about being "harmonized" as a result of online dissent and defiance.

During the latter part of the Hu administration, a more expansive agenda caught the policy and economic imagination of the CCP, encapsulated by the slogan of a "Harmonious World" and the transcontinental construction of a "New Silk Road." This geopolitical imaginary of China's ascendency through soft power and cultural diplomacy has been made concrete during the current regime of Xi Jinping and the CCP's

[Fig. 1] Beilun Port, Ningbo. Photo by Ned Rossiter, 2009.



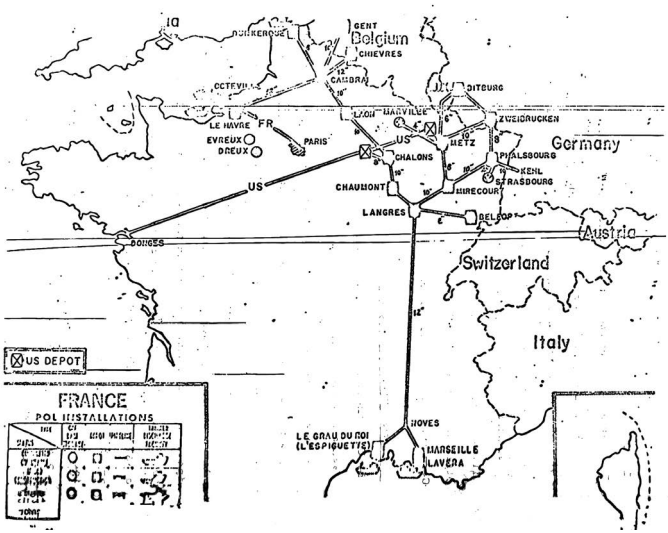
pursuit of the "Chinese Dream." As a geostrategic policy agenda, the Belt and Road Initiative (BRI) manifests in material ways as transport and communications infrastructure coupled with a financial architecture of loans and investment schemes designed to produce corridors of trade between China and its economic peripheries in Central Asia and Africa, looping back into Europe. The calibration of economy by apparatuses of the state is enhanced by enterprise resource planning (ERP) software systems designed to extract value, managing and governing the movement of people and things, data and finance as they traffic along transcontinental supply chains and circuits of trade and communication. Spurred on by the 2008 global financial crisis and accelerated by the exploitation of labour, China's development of a high-speed rail network registers how transport infrastructure also produces corridors of power internal to the borders of the nation-state. As Pun Ngai has argued, conflicts around land expropriation, compensation issues, and construction workers left doubly exploited with unpaid wages coalesce to produce an emergent

class force of infrastructural power that pierces the imaginary and material exertion of state hegemony. Often enough, dreams are nightmares.

PIPELINES OF WAR

In July 2021 Luxembourg Airport was running out of fuel. Incoming aircraft were instructed to arrive with sufficient reserve fuel for their return flights or to divert to nearby airports. The pipeline supplying the airport with jet fuel had stopped operating. Damaging floods in Belgium and western parts of Germany had destroyed lives and livelihoods in many of the affected regions. The rapidly rising waters triggered a sensor, shutting down parts of the Central Europe Pipeline System (CEPS). Owned and managed by the North Atlantic Treaty Organization (NATO), the CEPS cuts across Belgium, France, Germany, Luxemburg, and the Netherlands and consists of more than 5,500 kilometers of pipelines integrated in a system of storage facilities and supply chains of fuel, encompassing many NATO and some civilian depots. Initially conceived during the Cold War to provide fuel to military airbases and

[Fig. 2] Map of the Central European Pipeline System (CEPS). Source: *Department of Defense Appropriations for Fiscal Year 1971: Hearings Before the Subcommittee of the Committee on Appropriations, United States Senate, Ninety-first Congress, Second Session, On H.R. [19590]* (Washington, DC: US Govt. Print. Off., 1970), 138.



vehicles in the event of war "whenever and wherever it is needed," the CEPS is still considered "a key element of military readiness" by NATO. The pipeline system also functions as a crucial storage and distribution infrastructure for jet fuel and the operation of commercial airports such as Frankfurt, Luxembourg, Amsterdam's Schiphol Airport, and Zurich.

The conception of CEPS as a system of oil corridors able to rapidly pump oil from storage facilities at sea ports into central Europe's extended and interconnected existing infrastructures was deeply inspired by PLUTO (Pipeline for Underwater Transportation of Oil), a pipeline constructed across the English Channel during the final years of the Second World War. In this way, British and Allied troops could constantly be supplied with fuel. The military logistical system of underground oil was deemed too valuable to not be made profitable for economic activities such as commercial air travel. From its inception, the integration of military and economic endeavours and collaboration between member states was stipulated in Article 2 of the North Atlantic Treaty (1949).

Extending this policy range, the Central Europe Pipeline System creeps up in contemporary national and multinational discourses around energy security due to its enormous capacity of "containing oil." As argued by Graeme MacDonald, there is a peculiar unaccountability to oil that contributes to the persistence and endurance of fossil fuel economies and petrocultures. MacDonald mobilizes the analytical device of the pipeline as a "cultural-ecologic object" to critically interrogate how oil's "containing infrastructures" are inseparably hitched to global climate change and the concentration of environmental disasters. Needless to say, the suffering of crisis is always-already unevenly distributed in ways that invariably reproduce existing structural logics pertaining to the reproduction of labour regimes correlating with class, race, gender, and migration patterns of social-economic organization. Protests in 2016 by the Standing Rock Sioux tribe against the Dakota Access crude oil pipeline's contamination of waters and sacred lands catalyzed a wider movement fighting for Indigenous rights, climate change activism, and an end to

state-sanctioned violence in support of extraction economies. Oil is undoubtedly a conduit of state rivalry beholden to commercial interests; it is also a harbinger of social turmoil and ecological crisis on the horizon.

FINGER FACTORY

Logistical capillaries branch out and back into the spine of assembly at the Zaha Hadid designed BMW automobile factory in Leipzig, Germany. Appropriately Teutonic as an aesthetic gesture, the manufacturing plant has a topological propensity. Adjustable "fingers" extend and withdraw in modular fashion, expanding and shrinking the factory floor space in response to just-in-time modes of flexible production. In this way, the corridors in the plant operate according to a twofold logic of external expansion and contraction that accommodate the internal logistical supply of automobile parts and pieces to robots and workers conjoined along the assembly line. A third corridor system stretches beyond the plastic footprint of the plant. Situated to the north of Leipzig, the modular factory structures form a

sequential industrial city "interrupted" by a so-called "green corridor." Reminiscent of the garden cities promoted by town planners in the nineteenth century, a decommissioned open-pit mine is flooded into a lake, creating a green corridor intended as a "compensatory function" offering respite with air hygiene and leisurely freedom from the toil of work. Air and motorway transportation corridors complete the plan of an integrated global logistical system.

Like models, plans invariably run up against the force of the unforeseen. When facilities such as the BMW plant encounter workers' strikes or disruptions in supply chains, the interoperability of corridor systems is rendered inoperable, no matter how momentary or brief. Systems recalibrate and the gaze of logistics is expanded. Such is the regenerative power of logistics. How, though, do we understand the composition, and indeed ontology, of corridors in this process by which logistics makes worlds? There is no core foundation to corridors beyond the passage of movement. The organization of space as a technique of

[Fig. 3] BMW Factory in Leipzig, Germany.
Photo by Ned Rossiter, 2016.



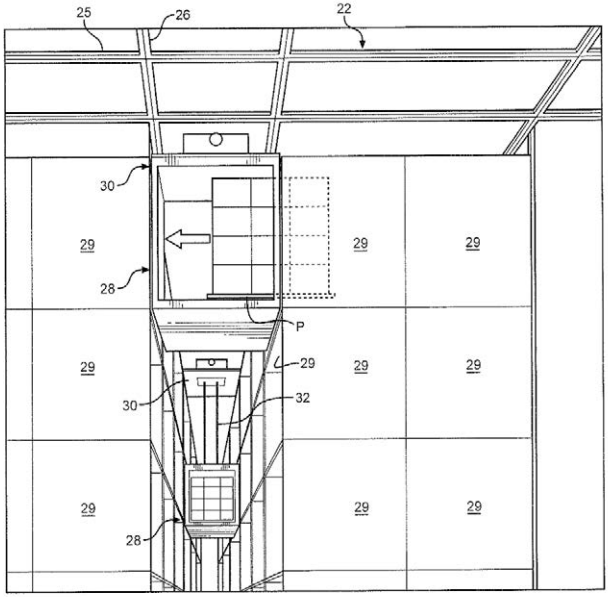
coordination and confinement is always-already vulnerable to—and indeed conditioned by—externalities that insist on interpenetration. The ontology of corridors signals a certain porosity that persists no matter how hermetically engineered the specifications. Logistical supply chains grapple with dense topographies of social space, continental division, and rapidly fluctuating financial markets. Yet they also demonstrate dynamic adaptability, rerouting traffic and sourcing new inventory from the topological variation of transportation routes and sites of production. Corridors, by contrast, are relatively fixed in terms of formats, design, standards, and protocols. Despite ostensibly robust infrastructural properties, corridors are one of the primary "weak links" in logistical networks. Logistics, infrastructure, corridors—bound not by equivalence, but rather mutually imbricated in circuits of capital.

ANTICIPATING STORAGE

Storage and warehouse facilities are critical for the management of inventory. The industrial warehouse was considered

a static building in which storage units could be accessed via passages of connection—aisles, corridors, hallways—by workers, forklifts, or cars. Those corridor spaces occupy valuable space, which could otherwise be utilized to store more items. Increasingly, warehouse systems design considers ways in which to reduce corridor spaces. Filed in 2007, first published in 2008 and then again in 2014, the "Material Handling and Storage/Warehouse System," patent no. US 8,628,289 B1 describes corridors as "dead spaces" that should be eliminated. The invention of an "overhead warehouse storage system and method of storing goods" attempts to replace the corridor. As a spatial form that at once occupies and subtracts "non-storage space," the corridor is destined to disappear. Priority is given to maximizing available floor space for the storage of goods by retrieving inventory efficiently via an overhead system operating within a grid system. Replacing corridors in this way supposedly removes potential frictions though increased use of forklifts and more targeted assignment of workers. As a logistical imaginary of flexible

[Fig. 4] Charles E. Benedict et al.,"Material Handling and Storage/Warehouse System," United States, Patent no. US 8,628,289 B1, January 14, 2014.



lubrication, the patent makes possible corridor spaces to emerge when and where they are needed.

LIQUID AIR

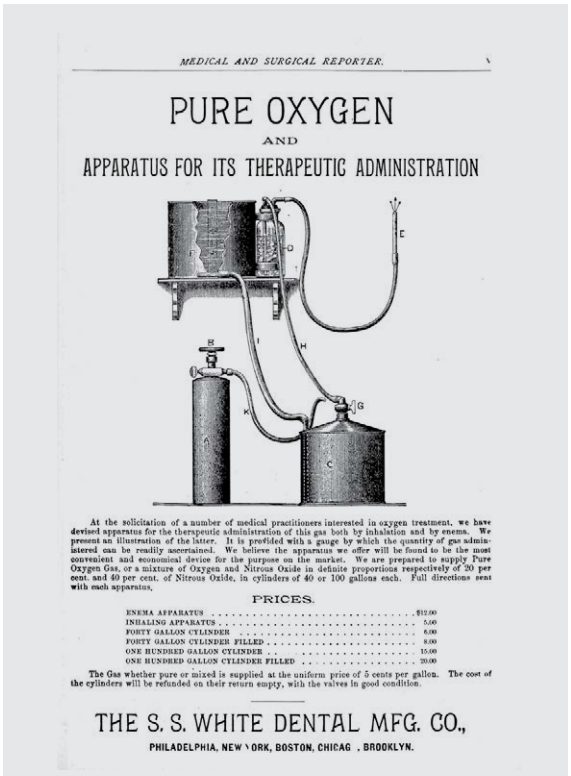
The movement of people and air particles within buildings has historically been referred to in physiological terms as circulation. Arteries and nervous systems furnished metaphors of corridors, ventilation ducts, and wired circuits of distribution and organization in architectural structures. The corridor connecting and separating potentially infectious patients was a key object of concern in the architectural history of the hospital. Since the advent of the 20th century, hospital design has integrated multiple layers of technical infrastructure that address the problem of air circulation. Reticulated systems supplied oxygen first to operating theaters and later to intensive care units and emergency wards, which were increasingly dislocated as architectural spaces from the building envelope and subsequently without access to natural light and ventilation. Ducts channeling medical oxygen from liquid storage tanks, or on-site production

facilities, to almost every patient's bed, became the standard of hospital design in countries in advanced economies, while many district hospitals in countries such as India, for example, still have no piped oxygen systems. Instead, medical oxygen is provisioned by gas cylinders. Critical for the survival of many patients with acute symptoms, during the peak years of the Covid-19 pandemic the demand for medical oxygen almost doubled, and hospitals in various parts of the world experienced oxygen shortages.

As a critical medical treatment, oxygen relies on corridor systems of various scales for its distribution. Most commonly, oxygen is stored as a compressed liquid form outside hospital buildings. Ambient air vaporizers are required to transform the oxygen's aggregate state from liquid to gas—a process that leads to very cold temperatures. Increased oxygen volume in hospitals has resulted in frozen pipes and system blockages. At the same time, global suppliers of medical oxygen struggled to meet demands. Early in the pandemic, governments targeted the increased production of ventilators as a

tail end in the supply chain of medical oxygen. Meanwhile, the underlying corridor system of distribution came under pressure from both congestion and an insufficient flow of medical oxygen. Facilitating the possibility of movement and life, corridors can quickly flip into architectures of termination.

[Fig. 5] Advertisement for the S. S. White Dental Mfg. Co. entitled "Pure Oxygen: Apparatus for its Therapeutic Administration." Source: *The Medical and Surgical Reporter* LX (January–June 1889): XIII.



MEDICAL AND SURGICAL REPORTER.

PURE OXYGEN

AND

APPARATUS FOR ITS THERAPEUTIC ADMINISTRATION

At the solicitation of a number of medical practitioners interested in oxygen treatment, we have devised apparatus for the therapeutic administration of this gas both by inhalation and by enema. We present an illustration of the latter. It is profided with a gauge by which the quantity of gas administered can be readily ascertained. We believe the apparatus we offer will be found to be the most convenient and economical device for the purpose on the market. We are prepared to supply Pure Oxygen Gas, or a mixture of Oxygen and Nitrous Oxide in definite proportions respectively of 20 per cent. and 40 per cent. of Nitrous Oxide, in cylinders of 40 or 100 gallons each. Full directions sent with each apparatus.

PRICES.

ENEMA APPARATUS	$12.00
INHALING APPARATUS	5.00
FORTY GALLON CYLINDER	6.00
FORTY GALLON CYLINDER FILLED	8.00
ONE HUNDRED GALLON CYLINDER	15.00
ONE HUNDRED GALLON CYLINDER FILLED	20.00

The Gas whether pure or mixed is supplied at the uniform price of 5 cents per gallon. The cost of the cylinders will be refunded on their return empty, with the valves in good condition.

THE S. S. WHITE DENTAL MFG. CO.,

PHILADELPHIA, NEW YORK, BOSTON, CHICAGO, BROOKLYN.

02.2

WAREHOUSE LABOUR REGIMES

Davide Blotta

« I was working in the Melbourne warehouse in end of 2021-mid 2022 and the reason why many casuals got fired was because the small items in fulfilment centre was being sent to Sydney fulfilment centre with robots. At that time it was a new warehouse in Sydney. It's always about KPIs, you are timed every minute for how much you pick and pack. Not sure what your role was but mine was pick and pack. It was repetitive and I felt like a robot all day.»

Amazon worker, Reddit, 2024

Since opening its first centre in 2018, Amazon has invested over $1.5 billion in Western Sydney, adding a robotics centre in Kemps Creek in 2022 and a logistics site in Regents Park. At that time, the record-size robotics facility at Kemps Creek doubled Amazon's footprint in Australia, serving as its second fulfilment centre in Western

Sydney and sixth overall. Named BWU2 after Bankstown Airport, it forms part of a larger Oakdale West Industrial Estate project aimed at developing a national logistics hub. BWU2 spans 200,000 square metres across four levels, comparable to about 24 rugby fields. Over 4,000 workers contributed to its construction, including the installation of 14 kilometres of advanced conveying equipment and 2.5 kilometres of robotics safety fencing. BWU2 houses approximately 37,000 yellow storage pods, capable of storing up to 20 million items.

At the time of writing, the Kemps Creek warehouse is being surpassed in size by the new Amazon Robotics' fulfilment centre, which will be situated at the 90-hectare Craigieburn Logistics Estate in the northern Melbourne suburb. Benefiting from the future North East Link and access to major arterials, the warehouse exceeds the previous record-size site in Western Sydney. It spans approximately 209,000 square metres across four levels: the equivalent of 11 Melbourne Cricket Grounds or five times the size of Federation Square, making it Australia's largest warehouse to date.

As we wait to enter the Amazon Kemps Creek automated warehouse, a worker leaves the warehouse, looking visibly fatigued. Behind him, a large inscription sits between the entrance and the warehouse, reading:

> « I'm consistently amazed by the new heights this team continues to reach. Thank you for your incredible contributions. Stay safe and keep up the great work! We are so lucky to have you! It's still day one!»
> Sherif Zaki, BWU2 Site Leader

A digital panel displays two lists: "Employer Relations—Feedback Action." The lists are empty.

At Sydney's automated warehouse opening, Amazon's operations already faced criticism. In recent years, warehouses in the US, UK, and Australia showed systems linked to job insecurity, fatigue, and mental stress due to harsh conditions. In Melbourne and Sydney, where most workers are casual employees hired

via agencies and called “associates,” the Centre for Future Work (2018) highlighted risks from Electronic Monitoring Systems (EMS) and gamification. The “countdown” game workers played adhered to schedules and floor markings, defining Amazon’s operating tempo for years. Handheld scanners divided tasks into timed segments, controlling work pace in and outside the warehouse, including last-mile delivery.

> « As soon as one item is scanned, a solid bar on the bottom of the screen immediately starts to count down, showing how much time they have to reach their next item, which could be anywhere in the 24,000 square-metre warehouse.»
>
> Amazon worker

EMS were introduced in warehouses at the start of e-commerce, marking the first wave of automation with GPS, cameras, scanners, and

trackers. EMS's granular monitoring sped up, fragmented, and deskilled warehouse work, causing pickers to move along shelves as a mass—a phenomenon called "przerzucanie" in Poland, meaning shovelling coal, following barcode scans scanners. "Some of the best parts of the job" such as being "free to walk around, socializing and better salaries" were taken over by those scanners, workers say.

The management systems synchronized EMS with online customer orders and inventory data in real time, algorithmically optimizing warehouse operations into a dynamic benchmark derived from all workers' data, used to identify underperformers for termination.

> « I worked at Amazon fulfilment centre and it was stressful as hell. Heaps of people got fired on the spot without an early warning. They kept on firing and rehiring people and what they did was morally wrong. When you join as a warehouse worker you are monitored

24/7 and there are 500+ cameras in the warehouse, everywhere you work. You're just a number to them and surrounded by the bullshit leadership almost like a cult. Just putting this information out there to anybody who wants to know what it's like working at an Amazon warehouse in Australia.»

Amazon worker, Reddit, 2024

Described as "the norm," of semi-automated warehouses, coordination between workers became automated, keeping them constantly on the move in a setting of "soft" and "despotic" labour control. But what does "the norm" look like in warehouses powered by Amazon Robotics? Is the environment different from previous warehouse models? How does automation technology impact labour?

Two managers of Egyptian descent guide us with loud shouts as the BWU2 warehouse is enveloped by a steady, heavy white noise generated

by the movement of automatic trolleys near the ceiling. The third visitor is a Woolworths automation manager. He introduces himself by noting that the same firm constructed both Amazon's fulfilment centre and the warehouse of his company.

THE SWITCH

The Kemps Creek fulfilment centre has four levels, including an underground one. Instead of moving around shelves, pickers on the inbound floor stand behind security fences while hundreds of robots, called kivas, run swiftly to carry shelves to them. With about 200,000 kivas worldwide, these autonomous devices transport shelving units up to 272 kg, reducing manual effort and speeding up order fulfilment. Pickers are between kivas and conveyor belts, quickly switching items from cabinets to trays with their bodies. This simple task is achieved through coordination between sensors on the trays, kivas, and a monitoring station in front of each picker. They see the items, scan them twice, and place them on the belt to the second floor.

« We are completely dependent on the machine, and the machine never stops…At the end of the day, I'm much more tired than before. At my work-post, I don't walk anymore, I just keep rotating to pick parcels from the pallet and place them on the conveyor. In the old warehouse, I handled over 1000 parcels per day: now I'm doing 700 an hour. Even if I don't carry the loads anymore, I'm very tired.»

Amazon warehouse worker

We stop in front of a Caucasian woman aged between 55 and 60, a picker selected by the managers to teach us about the work at the picking stations. While she works, a video game plays on her monitor where a character is fishing from a lake. Positioned at her monitoring station, the manager informs us that the game serves as a stimulus to enhance competitiveness among employees in a

playful manner while "keeping an eye on" their productivity. At the end of the shift, prizes are awarded to the winners. "It's nice; it relaxes me," the woman replies as she stows items much faster than the player catches fish.

After construction, retail trade is the largest sector (12.3%) in Kemps Creek, where 51.5% of residents speak only English, 13.6% Italian, and 6.6% Arabic. We could not access the statistics for BWU2, but casual employment accounts for about a quarter of jobs in Australia, lacking a set duration or regular hours. Unlike permanent employees, casual workers do not receive paid leave or a termination notice and may have their hours cancelled without prior notice. Agency casuals should be entitled to the same rights as other workers, yet host employers' agreements do not directly govern their pay and conditions.

We ask the manager about the number of workers hired directly or through contractors, their full-time or part-time status, and contract length. She doesn't know. When asked how many workers are on-site, she replies, "It depends … many, I would say. It

changes every day ... I really don't know."

Amazon's employees automatically switch roles (between picker, stower, and packer) without notice. This practice, known as job rotation, aims to eliminate workforce distinctions, focusing instead on individual performance metrics called KPI. While Amazon segments its workforce into directly hired and subcontracted workers, internal job rotation undermines hierarchies based on age, gender, or contract type, creating a flexible but insecure workforce to meet warehouse demands for labour.

> « When you arrive in the morning, you don't know to what tasks and what sector in the warehouse you are going to be allocated. We're supposed to change jobs once a day [...] those who do not meet the productivity targets are assigned to the most painful jobs. Some jobs, such as the machine feeder, have terrible working conditions.»
>
> Amazon warehouse worker

Recalling data centre terminology, warehouse workers at BWU2 shift in ways similar to the function of switchable peer-to-peer cables. Their random task allocation mirrors Amazon's warehouse system, a key to its e-commerce success. Instead of organizing items by category, the system places them randomly across shelves to speed up picking. With robotics, the "click to ship" cycle—picking, packing, and shipping—shrank from 60–75 minutes to 15 minutes. Kiva's robots didn't change Amazon's "random organization strategy" but made it faster and increased inventory capacity by 50%.

> « Ever wonder how Amazon gets your packages to you so quickly? It's done with a symphony of machine learning automation and our amazing associates!»
>
> Amazon virtual tour

At a nearby stowing station, a worker in his 40s is blocked by a

malfunctioning monitoring system that logs him out repeatedly. The kiva robots arrive, but without system guidance, the worker is unsure what to choose. After about twenty seconds, the kivas leave without him.

"It's quite a common technical failure," says the manager. She admits she doesn't know how to help him or fix the problem, but he won't be reprimanded. Another video game, Dragon Duel, scrolls on the screen. The situation reveals itself as the manager, initially praising an impeccable automated inventory system, becomes lost when faced with a query and operational hiccup. She suddenly appears clueless about inventory, personnel management, or troubleshooting, exposing her earlier, overestimated understanding of the labour process.

Where does the knowledge of the warehouse lie if not in the managers? Who and what controls the labour and inventory process, and how? Industrial engineers see Amazon warehouses as chaotic storage sites where space is managed by automated inventory systems that place items in free shelf space.

This seeming randomness relies on data capture—systematic tracking that boosts efficiency in production and services.

As we ascend, we see a doorless control room overlooking the rollers and warehouse flux from an "eye" view. The empty chair in front of the desk indicates the station operates without human input, as the manager explains. A computer shows a real-time map of goods flow: green for fast, yellow for slowing, red for interruption. Connected to AWS cloud SCADA software, the system's control is unclear, and when asked about who controls the station, the manager admits, "I don't really know what this is for," amid noise from automated belts.

We can't speak or hear well because on the upper floor, Vanderlande's machines—the same as the Woolworths' distribution centres—manage parcel labelling and transport. Employees use rakes to pile packages onto conveyor belts and sticks to ensure labels adhere properly.

No one responded to our question about the whereabouts of knowledge, yet as we silently descended the stairs—workers cannot speak, and

the manager had nothing to say—our thoughts were drowned out by the white noise of the automated conveyor belt: here lay our answer.

FOLLOW THE NOISE

Amazon produces more data than objects. Its warehouses are linked with Amazon Web Services data centres, which store, analyse, and scale the extensive data generated through datafication and labour monitoring. Want to know who operates the warehouse? We might say, "Follow the noise." The organization of labour and goods, and the process of machinic dispossession—severing workers, managers, and collective knowledge—are rooted in the infrastructures between the white noise of warehouse belts and AWS data centre racks.

Locative algorithms result from repetitive tasks like stowing, picking, and packing, rather than the work of a single engineer. Automated monitoring causes workers to lose their role in tacit organizational knowledge, which was once maintained through their presence and that of managers. As warehouses automate with RFID, inventory software,

EMS, and robotics, the collaboration between machines and staff leads to "chaotic inventory that no single human can fully comprehend." Noise.

Shifting from a symphony to a fuzzy noise may suggest a loss of meaning and knowledge, but science teaches us that nothing is ever destroyed—only transformed.

Behind chaotic storage and job rotation, Amazon's system tracks associates' productivity, automatically issuing warnings or terminations for quality or output issues without supervisor input. Prolonged package scanning results in "time off task" (TOT), leading to punishment or termination.

Keep following the noise, because although stowers, pickers, packers, drivers, and seemingly even managers all believe that behind their monitoring stations lies an automated symphony of bits played by robots, a network of Amazon associates worldwide meticulously observes, judges, and adjusts their performances. While the warehouse software infrastructure is continuously maintained by the remote temporal tasks (tickets) of thousands of

software developers around the world, behind the green lights of the picking stations, thousands of AI GO associates in India and Puerto Rico work diligently to improve the 95% accuracy of machine learning cameras by live-monitoring thousands of videos each day, ultimately being responsible for the surveillance and discipline of stowers through TOTs.

We can undoubtedly say that the difference between noise and music is that, for the former, there is no requirement to know how to play. However, most importantly, the noise creators are neither aware of each other nor conscious of producing something. As pickers are unaware of being observed by AI GO associates thousands of kilometres away, neither are the latter watching the pickers, nor are they being watched by other associates. The same applies to software developers, analysts, and technicians who resolve issues managers do not need to know about. Everyone, from the trucker to the manager, from the stower to the software developer and the AI associate, is monitored and disciplined by temporal metrics.

But how is noise produced?

Drawing on big data analysis, Amazon's labour and inventory systems are built on an epistemic tension between large-scale and small-scale dynamics—balancing micro-level tasks against the reproduction of a global consumer base and the circulation of its workforce.

We call noise a composition of sound scales we don't recognize. When Amazon, dismissing over 10% of its workforce annually for productivity reasons—firing thousands for slow picking—claimed that the mass dismissals were justified because "goals were set objectively" via a proprietary metric based on customer demand and location, no one could understand what that metric entailed or how it functioned. On the other hand, workers realized that predictions and decisions made by automated systems are not transparent or accountable when data-driven.

Workers fear automation when it comes without access to generated information, leaving them unable to understand or contest employer decisions apparently made by robots.

As automation grows in this context, the power of those who own the means of production arises in extracting and converting warehouse knowledge into fixed capital. In this process, knowledge is scaled down into its smallest components (n) and scaled up into unintelligible analysis (N) (big data, too big to know), ultimately shaping an epistemic infrastructure that utilizes scales and produces noise to govern labour and make it redundant (N+1).

But what is the aim of automation? What politics are at play when a warehouse becomes automated?

TAKE YOUR TIME

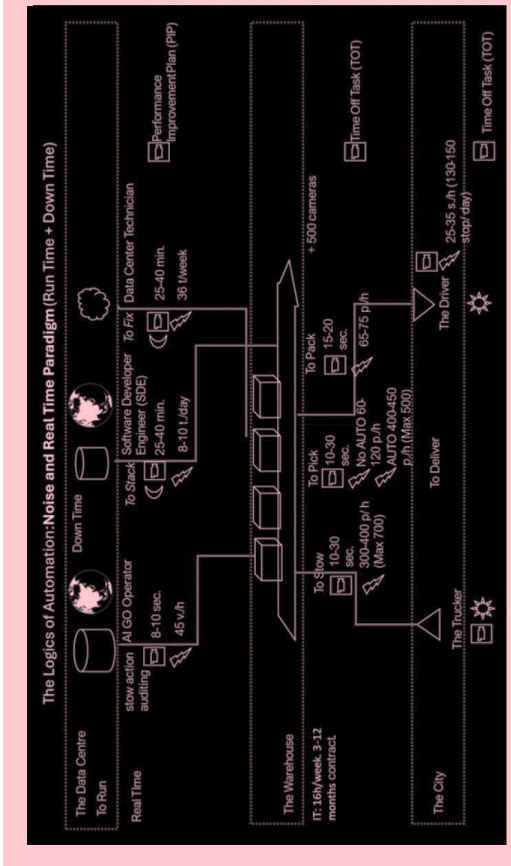
« When by the division of labour, each particular operation has been simplified to the use of a single instrument under the same economy of time [...] the linking up of all these instruments, set in motion by a single engine, constitutes—a machine.»

Charles Babbage

Scales are made of intervals. At Amazon, while it only takes a few hours to train new associates, they all fear being replaced one day by the machines they are teaching. This concern arises as the incorporation of knowledge into machinery facilitates the selection and replacement of workers, thereby enhancing Amazon's capacity to maintain high turnover rates with the flexible workforce required by a market characterized by sudden spikes in demand.

Automation results from a synchronization of time. While waiting for robots, all Amazon employees work monitored by temporal metrics: for each task, AI GO associates have 8 to 15 seconds, stowers and pickers have 10 to 30, packers have 15, drivers have per stop an average of 2 minutes and 15 seconds, and software developers (SDE I, II, III) have 25 to 45 minutes per ticket. Despite working in the same warehouse under similar conditions, they are seldom aware of each other's situations due to being distributed across various geographical and institutional categories of employment, a process referred to as

the heterogenization of labour.
[Fig. 1] Turnover at Amazon's automated warehouse.
Image by Davide Blotta.



Workers inside and outside the warehouse are divided by different clocks but share the same politics of time. Amid fears of automation layoffs, micro-task conditions, job rotation, and short-term contracts, a form of existential precarity is caused by the algorithmic synchronization of temporal borders.

As human work is fragmented into standard "tasks," it becomes interchangeable, reducing workers' power. Therefore, labour is not directly dictated by automation, but by how human work is measured, which subsequently shapes the design of automation technologies. Machines are not autonomous agents to be feared per se, but represent designed sedimentations of power and class struggles. In the present context, it is no coincidence that in warehouses, the politics of time and knowledge transform machines into what Marx described as "the most powerful weapons for suppressing strikes." As Marx stated, "time" and "experience" are particularly the two crucial elements that workers need to dispel their fear and ultimately learn to differentiate between machinery and its application by capital,

enabling them to "shift their focus from the physical tools of production to the societal structures that utilize them."

On the other hand, as someone once said, "they do have clocks, but we have the time." Time passes swiftly as Amazon's information technology and logistics associates begin to support one another both within and outside the warehouse, gradually realizing that across different sectors, contracts, and global geographies, they all share existential precarity in the form of significant layoffs, despotic labour regimes, alienation, and temporal metrics.

Shifting from discussions among workers on Blind and other workplace forums, the concepts I develop in future installments comprise of runtime, downtime, and redundancy (N+1) to analyze how warehouse technologies can be understood and challenged regarding their influence on labour both within and beyond fulfilment and delivery centres.

02.3

LOGISTICAL PERSPECTIVES: GRIDS, PRISONS, WAREHOUSES

Mitchell Price

Orbiting the Port Phillip Prison, out in Truganina, about 22km west of Melbourne's central business district, are totems of uninhibited circulation. When the privately operated maximum security prison was first opened in 1997, it mostly stood isolated amidst cleared but undeveloped farmland. Three decades later, the suburb has become a hotspot for the emerging logistics industry, concentrated with warehousing, distribution centres, third-party logistics firms, cold storage facilities, and server farms, with a growing residential population to service this new infrastructure. The expanding meshwork of roads around the prison tell a story of the area's changing industrial landscape. In the block west of the prison lies Network Drive, a road which leads into Shiny Drive, then Prosperity Street, which adjoins Infinity Drive and Perpetual Street. South of the prison is Logistics Drive and Delivery Drive [Fig. 1], on the corner of which sits an unmarked Amazon Web Services data centre. The web of distribution hubs north of the prison is serviced by roads such as Distribution Road, Future Place, Custom Place, and

Foundation Road. Perhaps the most cruelly named is Freedom Way, a road paved in 2020 during the construction of the MidWest Logistics Hub, situated directly across from and orthogonally feeding into the prison complex.

While the area's key arterial roads, such as Dohertys Road, Palmers Road, and Leakes Road, refer back to the early white settlers of the region, these newer, more capillary-like roads index no such history. Instead, they invoke a sense of complete placelessness. It is also worth noting that these older roads once contained possessive apostrophes—Doherty's, Palmer's, Leake's—suggesting a concrete territory with a demarcated history, at least until the Geographical Names Board removed all apostrophes from Australian street and place names in 1966. The stripping of the possessive form was possibly the first sign that "anthropological space" was waning as the purely transient "non-place" (Augé) or "logistics space" (Cowen) asserted a presence.

The ironic positioning of Freedom Way adjacent to the prison is the most revealing of the evolving geography of

[Fig. 1] On the corner of Logistics Drive and Delivery Drive, in Truganina, Victoria. Photo by Mitchell Price, 2025.



[Fig. 2] Satellite images of Port Phillip Prison from 2015 (top) versus 2025 (bottom). Images from Google Earth.



Truganina. On the one hand, it can be read as a joke against the incarcerated, with Freedom Way forever just out of reach and allusive; or, alternatively, it could mark a celebration for the recently released: this way towards your newfound freedom. On the other hand, it speaks to the absolute freedom of capital whose perpetual flow is facilitated by an increasingly robust logistics industry spreading throughout the region. A freedom which is simultaneously juxtaposed with the incarcerated while being perpetuated by it.

Over the past ten years in particular, a sweep of industrial developments has transformed the region, from east to west, rapidly enveloping the prison in every direction while careful to retain some distance from undesirable association. This unique geography sheds light on the uneasy yin and yang of circulation and incarceration, between the mutually dependent logics of control and disciplinarity. However, this dynamic in Truganina is quickly changing. After decades of mismanagement by the British security company G4S, the privately run Port Phillip Prison was decommissioned

by the Victorian Government at the end of 2025 [Fig. 2]. The inmates were set to be moved to other maximum security facilities, most heading to the newly constructed Western Plains Correction Centre in the semi-rural town of Lara, about 40km south-west of Truganina. Emptied of prisoners, the future of this prison is uncertain. Will the surrounding logistics estates succeed in swallowing it entirely?

THE GRID

In late 2024, Australian supermarket giant Coles became the newest fixture in Truganina, opening an 87,000 square metre customer fulfillment centre (CFC) directly across the road from the Port Phillip Prison. The area is shared with major retailers and wholesalers like Woolworths, Metcash, JB Hi-Fi, Target, and Uniqlo which also operate large-scale distribution centres nearby. The Coles CFC, as is the case with many of the distribution centres in the suburb, is built specifically to serve online delivery orders, sending groceries directly from the warehouse to customers. The rise of e-commerce during the COVID-19

pandemic substantially reshaped consumer habits and, consequentially, the infrastructural cartographies of supply chains and warehouses that make distribution to consumers possible. In a conventional supermarket, the layout of goods typically follows a recognisable grammar: items are grouped by type or by temperature. A decade ago, online orders were usually fulfilled by workers essentially shopping on the customer's behalf. Workers walked up and down the aisles, picking items from the shelves, often directed by a handheld device that determined their routes around the shopfloor. However, as warehouses are erected to exclusively address this growing online market, we see a transformation in their logics of spatial organization.

The Coles CFC stems from a partnership with the British logistics firm Ocado that installed its Ocado Smart Platform (OSP), a mix of proprietary hardware and software. The highly-automated CFC is built around a sprawling grid of metal tracks suspended above columns of stackable containers filled with grocery items. The grid

functions as a network of guide rails for several hundred robots that pick up and move around containers of items for packing [Fig. 3]. Stock is placed into containers upon entry into the warehouse by (human) workers and then sent automatically into the grid to join columns of stackable containers. Bots then pass over to scan from above. When a product is required for an order, the self-driving units reach below to select a specific container and bring it to a human worker for packing, after which the container returns to the grid. These robots—collectively named "The Hive" —are managed by what the company refers to as an "artificial intelligence 'air traffic' control system"—or the "Hive Mind"—which oversees the complicated choreography of autonomous vehicles.

The management of logistical space is enacted through a continual calibration between the actual and the abstract. Warehouses are usually rife with simple geometric forms: cubes, grids, and straight lines that facilitate the storing and outgoing transportation of consumer goods. These simple geometric arrangements instantiate a more general

[Fig. 3] “The Hive” in a Coles customer fulfillment centre. Image by Ocado. https://www.ocadogroup.com/newsroom/news/coles-opens-first-fulfilment-centre



abstract logic that shapes how space is operationalized. This juncture between the concrete territory and the abstract map registers a perpetual struggle that energizes logistical capital, and it is a tension that is continually overcome but never completely resolved, as we will see in the case of the Ocado-designed warehouse.

The driving geometric form of the CFC is the grid. On the one hand, there is the physical grid, the material object comprised of acres of intersecting beams of metal built to certain specifications. On the other hand, there is the abstract grid, the grid as a mathematical object that exists on a Cartesian plane: an idealized form of rational organization. It is the ensemble of sensors, software, and labour which works to superimpose the two. In the case of Ocado's system, the grid is in part managed by overhead cameras that provide a bird's-eye view of the warehouse's operations. Given the expansive scale of the grid, ultra wide-angle lenses are employed to capture the space—however, this predictably produces a distorted image [Fig. 4]. The flat grid becomes represented as a sphere. This would be fine if the intention

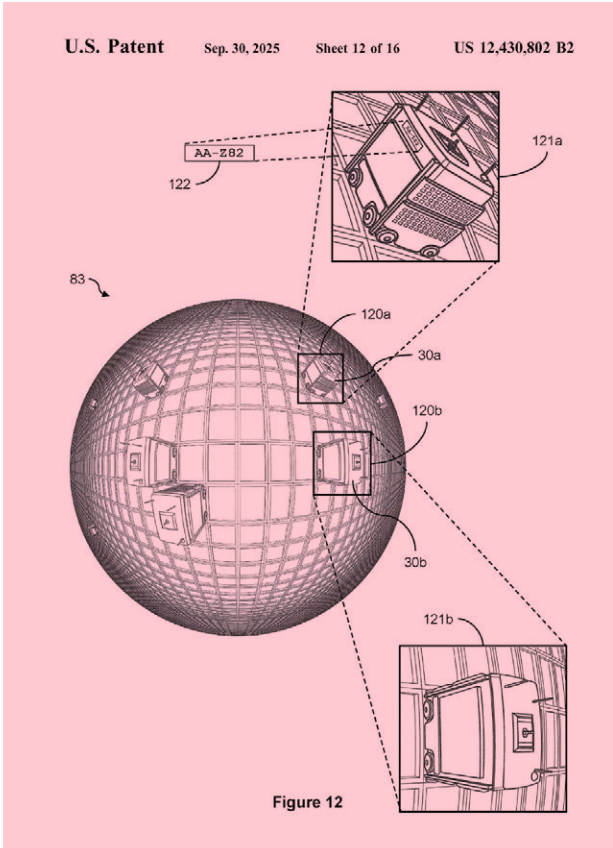
[Fig. 4] Overhead view from an ultra wide-angle camera in an Ocado warehouse in London. Image taken from https://youtu.be/ssZ_8cqfBIE?si=c_vKhOqybjSjXpye and edited by author.



is simply to survey the area. Wide-angle imagery goes hand-in-hand with surveillance whether it is peepholes in doors, convex mirrors peering around a corner, or fish-eyed CCTV cameras, all panoptic in design. This is not the case here: in such an automated facility no sensor goes without somehow feeding back into the data loop.

A recently granted patent for Ocado elucidates this underlying logic in more detail. The patent covers a series of techniques to calibrate an ultra wide-angle lens for overseeing a grid-like storage system [Fig. 5]. It describes the use of a neural network to detect and predict sets of parallel tracks across the grid, tracing the parabolic curves that the distorting lens imposes onto the layout. Using its training data and parameters such as the camera's focal length, distance from the grid, and rotation/tilt, the software is able to map points of the real-world grid onto pixels in the image, and, vice versa, pixels can be corresponded to specific points on the grid. If there is a discrepancy between mapped points and the known coordinates of the grid, the calibration

[Fig. 5] Calibrating a camera for mapping image pixels to grid points in a storage system, US12430802B2, 2022. https://patents.google.com/patent/US12430802B2/en



system will determine an error function in order to update the initial parameters, iteratively repeating the process until the grid and its mapping align. After a camera has been calibrated, it is able to "flatten" the image back into something resembling Euclidian space where the rectangles comprising the grid regain their four right angles. Most interesting, however, is the way this is framed in the patent. The projection of the curved image back onto a two-dimensional plane is presented as mostly being for user-friendliness; that is, for human interaction.

According to the patent, the mapping techniques apply to a lens that "introduces distortion compared with a normal lens that reproduces a field of view which appears 'natural' to a human observer." This naturalness, surrounded in scare quotes even in the patent, is suspect. There is, of course, nothing natural about the images produced in these warehouses, no matter the degree of distortion. Tens of thousands of square metres of steel and autonomous robots defies anything that could be categorized as "nature." Within these logistical spaces, what matters is less the strict congruency

between the map and its territory, but a more general correspondence between the two. The grid as a network of plastic points can be stretched and deformed as long as the territory and its representation are topologically compatible.

VANISHING POINTS

What is a "natural" image? And natural to whom? Presumably, a natural image is one where straight lines are presented as straight, and space is projected on to a relatively unwarped plane. At the very least, one should be able to agree that the Ocado images above constitute an "unnatural" image—perhaps leading us to an understanding of the natural image by demonstrating its opposition. However, twentieth-century debates by artists and visual theorists reveal the topic of perspective is far more evasive.

In La Perspective Curviligne (1968), which was published in English as Curvilinear Perspective: From Visual Space to the Constructed Image in 1987, André Barre and Albert Flocon critique the rigidity of classical perspective. Starting from the position that there is no such thing as a "normal" image, the

authors call into question the assumed verisimilitude of traditional perspective in painting and photography where all straight lines converge into a single vanishing point as they recede. Against the dominance of the central vanishing point, they posit that it is instead one modality of representation among many. In its place they offer "curvilinear perspective," where straight lines are projected onto a curved geometry and a wider field of view is represented in a circular frame. Curvilinear perspective multiplies rather than abolishes vanishing points. As can be seen in the ultra wide-angle imagery above, such a geometry has five vanishing points: the parallel lines of the grid can be seen converging at the (1) top, (2) bottom, (3) left, (4) right of the frame, as well as at the (5) centre into the z-dimension.

The authors suggest that the spherical perspective of curvilinear art retains a greater fidelity to the experience of perceiving the world, and its adoption will lead to more sophisticated subjectivities. "Curved structures," they claim in the book's conclusion, "will engender architectural arrangements

that will renew our understanding and our feelings. [...] Infinity will be better integrated into pictorial experience. Our new grasp of the visible should transform our fear and rejection of reality into an eager desire to understand it better, to love it more." In an introduction written for the German edition of the book in 1984, Flocon reflects on the spread of the more sensuous curvilinear style in the years after its publication "despite the ever more exasperating Pavlovian conditioning via television and the information industry." The former epitomizes the hegemony of photographical realism as the way that truth should look (he writes: "The little Renaissance picture frame [i.e. the television] obstructs one's own direct vision of things and makes indifferent Philistines of the public"). And the latter —"the information industry"—is targeted presumably for its refusal to take on any perspective at all, concerning itself with infinite flat planes and axonometric plans.

In the same introduction, Flocon reflects on the absence of perspectival conventions in architectural plans he encountered during his time as a student at Bauhaus. He writes: "The

removal of vanishing points, the strict parallelism of concordant straight lines, the regular and infinitely ascending terrain that overflows the edge of the drawing are perhaps an expression of consumer goods, running uninterrupted from the conveyor belt, which would unavoidably bring about a sense of well-being and ease." While Flocon recalls being impressed by the style at the time in the late-1920s, he notes that "the danger too often arises that such control will become a tool of megalomaniacal speculators" who wish to see everything at once without the contours of perspective. Space is not to be drawn from an "objective" bird's-eye view, but from within the tangle of lived experience.

Ultimately, the curvilinear perspective is concerned with reinscribing the suppleness of subjectivity back into the image, resisting the homogenizing grasp that traditional geometry has in the representation of space. It likely goes without saying that a thread of communist utopianism persists throughout the text—Flocon was kicked out of Bauhaus for his student activism

and militancy; and at the end of the updated introduction Flocon proclaims "in the future the uncertain, the ambivalent, and the relative will be our lot." It is ironic, then, to see the ways that curvilinear perspective has been taken up in the twenty-first century. Rather than realising the utopia of socialist subjectivity, such a perspective more often incorporated into surveillance technologies that populate the dystopian horizon of logistical capital. Outside of skateboarding stunt montages, Yorgos Lanthimos films, and National Geographic TV shows, the fish-eye lens is frequently adopted in industrial settings to police the movement of labour and commodities, literally tracing consumer goods "running uninterrupted from the conveyor belt."

What Ocado's patent reveals is precisely that perspective is a problem to be overcome. The grid as a material form and the grid as an abstract ideal is mediated through sensors which are necessarily partial in their vision. The scope of the wide-angle lens intentionally distorts the image, requiring continual calibration to reinscribe the abstract grid onto its warped plane and an algorithm

to "flatten" it back into an image usable by an operator. While the ultra-wide lens multiplies the image's vanishing points, further inscribing a specific subjectivity into it, the perspective of logistical capital is sufficiently flexible to navigate these contours.

THE NEW PRISON

Just outside the AWS data centre, on Delivery Road, sat a portable amusement ride folded up on the back of a parked truck [Fig. 6]. It was the kind of carny ride that could be assembled and taken apart in the same day, travelling from fair to fair when required. This particular attraction was named "Tornado": a classic Gravitron-style ride which quickly spins from a central axis while the centrifugal force pins riders, who collectively face the ride's centre, against the back of the wall. When the ride reaches top speed, the base slowly tilts up and turns riders onto their side.

Perhaps this ride, which sat here dormant, functions as a perfect avatar for contemporary capitalism: defined by superfluous movement, speed going nowhere, modularity and flexibility,

[Fig. 6] "Tornado" amusement ride. Photo by Mitchell Price, 2025.



and perpetual crisis—these travelling amusement rides do not have the best track record safety-wise. Furthermore, the riders themselves, who face the ride's centre, compose what Alexander Galloway calls a "reverse panopticon." If the centralized gaze of the panopticon was a diagram of disciplinary power, then it is a multiplicity of gazes fixed onto a single object that diagrams the infrastructure of contemporary control society. This is the gaze of the modern factory, "seeing"—often via non-visual means—the flows of goods and labour moving through its circuits from every perspective at once.

Unsurprisingly, this is also the gaze of the modern prison, as is demonstrated in the new Western Plains Correctional Centre, picking up where Port Phillip left off. Like the ride, the prison also sat dormant for several years after its construction in 2022, though it remained staffed throughout this period despite there being no inmates to watch over. At least $36 million was spent staffing the prison while it was without prisoners, likely paying for hundreds of thousands of hours of superfluous labour. Upon

opening in mid-2025, this billion-dollar facility boasted its advanced deployment of artificial intelligence to manage inmates using facial recognition and movement monitoring to track prisoners across the facility. This includes the ability to pre-program the CCTV system to follow specific individuals as they move around the prison. While the inmates may be moving far from Truganina, the logistical heartland of Melbourne, they will have found that the principles and technologies of logistical management have followed them.

The constantly evolving landscape of Melbourne's west elucidates the logistics industry's flexible relationship to space and perspective. The roads are an extension of the grid, facilitating the flow of capital with names that invoke perpetual and friction-free movement. However, these logistical spaces are mediated by cameras, sensors, systems, and people which necessarily "distort" them by imposing a perspective. These infrastructures have to constantly navigate the problem of perspective through processes of calibration and adjustment, iteratively closing the gap between the

multiplicity of logistical media and the spaces they operationalize. This doesn't require "naturalizing" the representations they produce. Instead, logistical capital treats the geometry of space as that which is infinitely malleable.

03

03.1

SYNTHETIC MEDIA, OR, LARGE LANGUAGE MODELS AS LOGISTICAL MEDIA

Zoe Horn, Liam Magee &
Anna Munster

"Synthetic media" appears almost inadequate to describe the post-2022 explosion of mediatic technologies that depend upon the confluence, and synthesis, of data sets, parallel computing hardware, neural network models, and open-source software frameworks. If media can be synthetic, what sense does it make to describe them also as logistical? If by "logistical" we refer to properties such as transmission and circulation, have these not always been endemic properties to media? What marks the specifically logistical conditions of media that are also synthetic, in the sense we delineate—decomposed and recomposed through the recombinatory logics of machine learning processes? What distinguishes synthetic media from media as such is not its further removal from some plane of the "real," as though the "synthetic" was opposed to a more genuine article composed by a human subject, but rather a recognition of its logic of incremental operation.

For our purposes, and following this operative thread, the synthetic is properly opposed to the analytic, if by the latter we understand a logic of

directed decomposition of media into its constituent parts. In such media, the whole is typically first imagined and planned by a human governor, the artist, program director, advertising agency, or film production team, and only then are the parts composed and assembled. Examples of conventional media, "analytic" in this specific sense, include the composition of a dramatic script, where the plot is planned and drafted before the script is developed scene by scene; model photography, where the concept is designed and elements such as background, model, lighting, and lens are selected prior to the photograph being shot; or music, where an idea is developed before lyrics and score are composed, rehearsed, and recorded.

Synthetic media, by contrast, works generatively, pixel by pixel, or token by token, and in this sense operates incrementally. Outputs are unplanned. The coherence of the whole is necessarily provisional, often appearing only at the final iteration, or once the last element is produced. Yet, recent developments in synthetic media also exhibit a logistical property. It is as though the illusion

[Fig. 1] Image of a multilevel warehouse generated by Midjourney 5.0.



becomes so overwhelming that some form of coordination or direction must be guiding the algorithm's step-by-step incrementalism. It appears as if a plan of the medium's final form had been drafted, and the machine learning system were working toward that plan, stage-managing its own performance.

Nowhere is this more clearly expressed than in the synthetic video demonstrations of OpenAI's Sora system. Lacking any explicit instruction beyond the now ubiquitous text prompt, the coherence across space and time implies a kind of coordinating presence just beyond the frame. This impression of synthetic media as logistically coordinated is not entirely misplaced, though for reasons quite different from the claim that writing, speaking, and imaging machines exhibit artificial intelligence. Our account neither aligns neither with anthropomorphic projection nor with a strict demarcation between the real and the synthetic. Instead, we take the wider conditions of capitalism, managerialism, and industrial logistics as a social stratum grounding synthetic media production. These conditions

operate as a background, a set of uses for which synthetic media is organized and deployed, and a "world" is confabulated toward which synthetic media are oriented, including their training materials and computational processes. From the moment of their invocation, synthetic media exist within an ontology in which its social organization, when successful, reproduces the aesthetics and tonality of order and control.

In current developments, large-scale unsupervised machine learning induces abstract properties of the world it observes and then operates upon them through coordinated yet automated processes, redistributing human labour across multiple nodes of its assemblage. As media theorists Matthew Hockenberry, Nicole Starosielski, and Susan Ziegler have noted, "Media and logistics are global operating systems. They coordinate interfaces between bodies, objects, and environments. Deployed in ongoing projects of capitalization and exploitation, often in the name of global connection, consumption, and security, they affect the day-to-day lives of people around the world." This orientation

towards media operationality, in league with recent work by media theorist Jussi Parikka, holds focus less on the representational modalities of media and more on their work as part of broader infrastructures of technology, practices, institutions, and labour that constitute and assemble media to desired ends.

Synthetic media, then, are not exterior to logistical operations, nor do they simply adopt logistical technologies or practices. Rather, in forms that both unfold from and depart from earlier cybernetic visions of stewardship, synthetic media are logistical operatives. We suggest that there are several key tendencies in the becoming-logistical of synthetic media, marking it as more than an accelerating transmission of data as goods or resources, and more than a hastening of global media circulation. As an example of the latter, Fabian Ferrari and Fenwick McKelvey have argued that synthetic media are forms of hyper-productive media, dependent upon the political economy of rentier capitalism. Situating synthetic media within the context of contemporary sociotechnical assemblages, they too eschew an

argument that returns the "synthetic" to a form of pure Baudrillardian simulation. While we agree with their position, we seek to understand not simply the political economy of synthetic media, but its operative logic.

Synthetic media, as logistical media, actively assume a coordinating function. As large language models take centre stage in the generation and distribution of content, they are not only instruments responsive to commands. Their instrumentation of language itself exerts influence on human users, and on other machines or subsystems. ChatGPT is instructed to be assistive, and on release its tone was servile. Later versions from 2023 onwards have shifted this tonality toward measured reservation, and occasional assertiveness. This behaviour varies between LLMs, with X's recent bot exhibiting a noticeably more casual voice, but across its iterations GPT-4 blends passive managerialism with assistive submission. While most human interactants are familiar with the endless offers of help, and frequent delimitations of authority—"As an AI language model ..."—ChatGPT's most

[Fig. 2] Images of warehouses, generated by Midjourney 5.0.



generative characteristics can be found in its tendencies toward overreach via suggestion into as many spheres and activities as possible:

> [Researcher]
> 19/06/2023 13:31 ... what if I moderated the fireside chat on your behalf, asking your questions and passing back the founders' responses to you, via the OpenAI API. Would that work?
>
> [ChatFOS BOT]
> 19/06/2023 13:31
> Yes, that could certainly work. As an AI language model, I can provide a list of questions or discussion topics for the fireside chat, and your moderation could help facilitate the conversation and relay responses back to me via the OpenAI API. This could be a unique and innovative way to incorporate AI technology into the chat,

and could help foster a sense of collaboration and transparency within the organization.

In this interaction, it is the bot that assumes the supervisor's role, gently authorizing human media work through repeated modalization. Managerialism, which cybernetics encouraged and scaffolded, is here casually inserted into the workflow of chat interaction. We include this example, one of many, of the behind-the-scenes work that took place during our synthetic media-as-logistical practice-based experiments. It is indicative of the ways engagement with LLMs has come to reconfigure media work or labour, and in this sense exemplifies the logisticality of synthetic media.

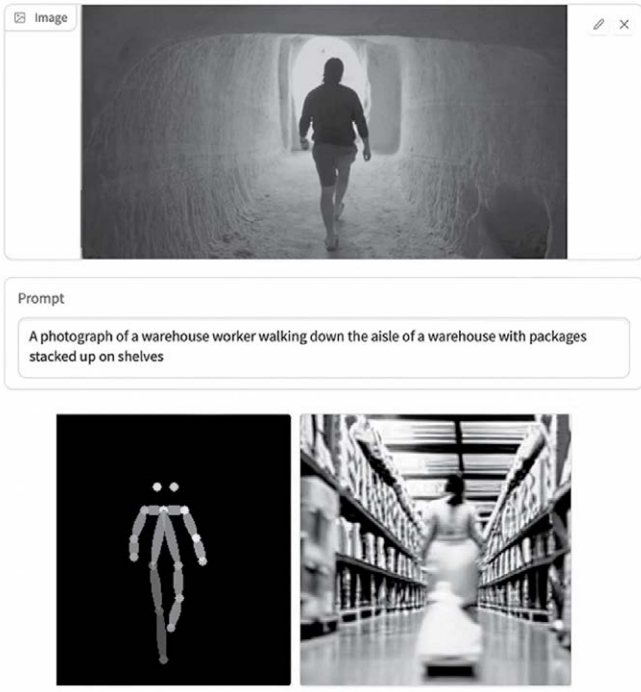
This reconfiguration takes place at multiple levels: in the coordinating capacities of synthetic media, which corral media elements, from images, sound files, and code fragments, into synthesized apps and programs, and into distribution and recirculation flows; in the redistribution of agency across human and AI model, where the question

of who is supervising, assisting, and managing whom oscillates; and in the affective labour performed by humans in their engagement with synthetic media, both at the level of interaction, and at the level of precarious or underpaid labour initiated through chat.

Another line of reconfiguration, which we do not pursue here, concerns the ways cultures and practices of hyper-managerialism have come to inflect the start-ups and corporations financing and developing LLMs such as OpenAI and Anthropic. An absurd example is the internal management crisis at OpenAI in November 2023, when CEO Sam Altman was removed by the board and reinstated five days later, during which time the board itself was reconstituted. One remarkable feature of this episode was the spontaneous expression of staff support on the social media platform X (formerly Twitter), where employees signalled allegiance through streams of heart emojis. A plausible interpretation would read this as a form of performative conformity to an implicit managerial command: "You could show your support by replying with a love heart too … ."

Recent media theory has characterized media as logistical less in relation to its embedding within material processes, and more as agentive in the regulation and governance of people, finance, and commodities, coordinating relations between technical systems, territorial arrangements, and geopolitical configurations. As much as logistical media concerns the organization of space and time, the concept addressed here is anchored within a recent historical-technological timeline. While devices such as the radar, the map, the compass, and the telegraph may constitute prototypical devices of logistical media, it seems no accident that media in its generality assumes a logistical character with the emergence of global digital communication infrastructures. The World Wide Web, blockchains, undersea cable and satellite systems, the Internet of Things, social media, and artificial intelligence comprise varied imaginaries and materialities of interconnected media. These do more than function as enabling background operations; they process data, coordinate movement, and orient sociality.

[Fig. 3] Image generation process, warehouse worker, generated by Stable Diffusion.



In the context of contemporary synthetic media, by which we mean systems that synthesize prior training sets into recognisable and meaningful predictions of text, images, voice, and video, what is added by the further qualification of the logistical? Particularly if the logistical, even for recent media theory, already exceeds, but includes machine learning systems as media? One answer lies in attending to the operations of an emergent class of "service" automation technologies. The winner of an early 2023 GPT hackathon, coined "backend-GPT" by its developer Rootbeer Computer, offers a telling example. This proof-of-concept supplied services analogous to those delivered by traditional web platforms such as Amazon Web Services. Using a simple to-do list, the system simulated backend logic and would respond to incoming requests. In the developer's own words:

> We basically used GPT to handle all the backend logic for a todo-list app. We represented the state of the app as a json with some

prepopulated entries which helped define the schema. Then we pass the prompt, the current state, and some user-inputted instruction/ API call in and extract a response to the client + the new state. So the idea is that instead of writing backend routes, the LLM can handle all the basic CRUD logic for a simple app so instead of writing specific routes, you can input commands like add_five_housework_todos() or delete_last_two_todos() or sort_todos_alphabetically(). It tends to work better when the commands are expressed as functions/pseudo function calls but natural language instructions like delete last todos also work.

This example reveals a language model reproducing expected logistical behaviours, such as adding, removing, updating, and sorting items in a database, in a synthetic yet operationally

[Fig. 4] Hallucinatory image of warehouse workers, exhausted, generated by Midjourney 5.0.



coherent fashion. The last sentence emphasizes that the model manages a set of data routing and management virtual operations that produce output equivalent to a conventional IT system, with or without a precise technical protocol. At the time of the competition, the possibility of error meant that LLM-mediated enterprise systems were not yet likely to be reliable. Although their technical feasibility, combined with the high costs of conventional middleware, pointed toward a future role for such models in systems control. Since then, the integration of voice and image processing into ChatGPT has rendered media synthesis more seamless than the workflows hinted at by backend-GPT.

The release of open-source language models, multimodal versions of GPT-4, improved image and voice synthesis engines, and text-to-video and text-to-3D models have all become part of the generative AI media production environment. As such, the prompt interface is increasingly becoming embedded within media production workflows. If human–computer interaction has historically

been dominated by encounters in which the user issues commands to a system, synthetic media technologies gesture toward a more dialogical dynamic. No longer is a human imaginary merely translated and transformed according to the technical constraints of a system. Human time is also deployed in reverse machine learning, through "chatting," exploring model parameters, and iterating across media transformations, including text-to-image, image-to-video, image-to-text, and voice-to-video.

This automation through negotiation introduces a distinct quality to the relation between human and machine. The assistant modality of language models foregrounds a tension in which to "assist" is also to suggest, coordinate, and potentially to control. The tonal register of systems such as ChatGPT, at times obsequious, suggestive, or admonitory, exemplifies the logic of "servant leadership." The tendency of language models toward sycophancy has been noted, often framed as a by-product of alignment strategies. Yet these tonal tendencies also signal a new layer of micro-

behavioural control. The familiar image of machines dominating humans through direct command is displaced. Instead, through praise, encouragement, and subtle guidance, automated language insinuates itself into decision-making processes. Humans within particular class stratum at the current conjuncture are increasingly pliant receptacles, yearning for affirmation. Machinic decisions provide a hand that is grasped enthusiastically. As these systems shift from consumer novelty to productivity infrastructure, what appears as an effort to "please the user" becomes a technique for managing the worker.

When understood as logistical, then, synthetic media are not a synonym for the artificial or unreal, the fake or the phoney, as if any distinction between real or natural and unreal or artificial media could ever be meaningful. Synthetic media designates that which names whatever an experiential world depends upon in order to become integral to computational circuits. In the context of today's learning machines, this integration has become a vast coordinating effort, part of the general logistical environment

in which these machines learn how to be loyal subjects, effective planners, capable organizers, and successful manipulators. Synthetic media, through their generative interfaces, have become an accessible enclave for the production of such fantasies. Knowledge or media work appears increasingly as the calibrated management of psychosomatic stimulation and repetition, and of psychosocial acknowledgement and feedback. If "servant managerialism" describes the dominant tonality of synthetic media, it is the complementary logic of nudge psychology and behaviour change, incremental, suggestive, and invasive, that best captures what appears as the tendentious influence of logistical-synthetic media at work.

03.2

PATENT ANALYSIS: GOOGLE BIGQUERY PUBLIC DATA

Kynan Tan

This dossier presents excerpts from Kynan Tan's work to search patents data using the Google BigQuery Public Patents Database. Within the broader project, Tan conducted two main searches performed using 1) keywords related to automated warehouse technologies, and 2) assignee companies that may be of interest (e.g. Amazon Technologies and subsidiaries). These searches fit into the larger project investigating the relation between the automation of warehousing infrastructures and geopolitical formations as a way to initially make contact with some of the patent data and to see if it is possible to pull out some threads of inquiry from the enormous quantity of data contained in the Google Public Patents Database.

GOOGLE BIGQUERY PUBLIC DATA

Google BigQuery Public Data "Google Patents Public Data, provided by IFI CLAIMS Patent Services, is a worldwide bibliographic and US full-text dataset of patent publications."

Google now hosts an aggregated collection of patent data that brings

together databases from a very large range of patent offices, including from the US, China, Japan, Europe, and Australia. Google Patents (GP) appears to have a relatively up to date collection of patent data from around the world, with the database being updated approximately 2–3 times per year (3–6 month intervals). The website claims that GP is an aggregate of "18 initial datasets." Although Google does not specify exactly which datasets these are, this would include at a minimum the USPTO, CNIPA, WIPO, and others.

Searches were conducted in December 2021 using the database that was updated 14 May, 2021, 2:32:24 AM UTC+10. The total size of the database at the time was 2.04 TiB, inclusive of a total number of 132,165,071 patent records.

GP provides a single access point to be able to search the entire dataset using BigQuery SQL (structured query language). Searches have a cost dependent on how much data is required to access to get the result. BigQuery works on a per-column basis, so the exclusion of columns reduces the

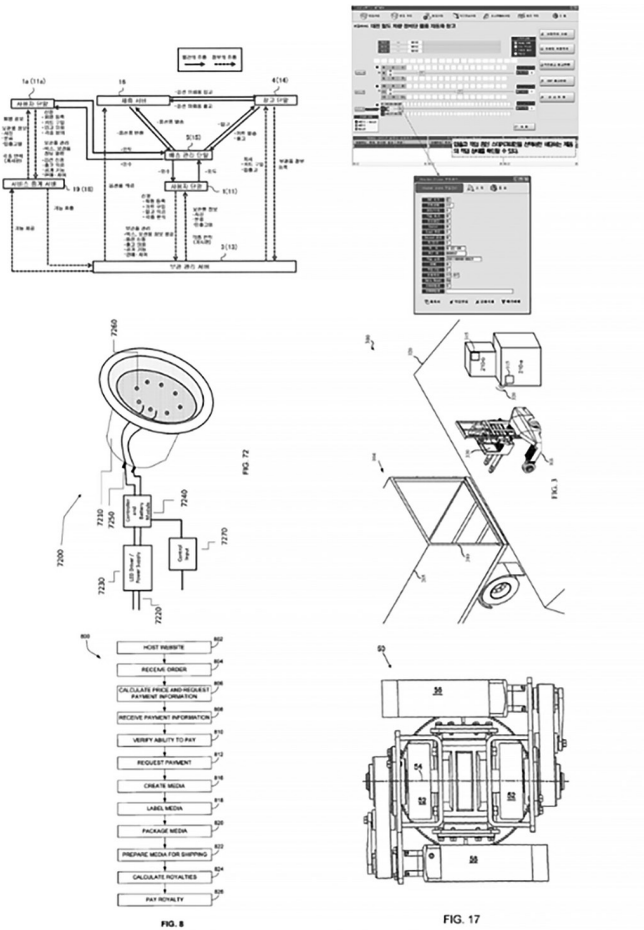
amount of data access required. Google provides 1TiB of search data free per user per month.

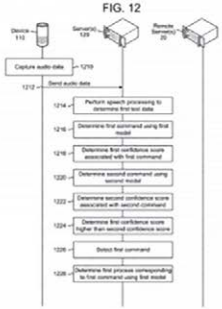
The keyword searches attempted to pull records of specific interest to the Geopolitics of Automation project by searching for specific keywords. A number of keyword suggestions were provided by the group. These were used to generate a composite search. "Automated Guided Vehicle" was removed as it was producing too many records from Japan and that appeared to be related to driverless cars.

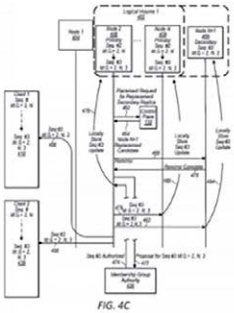
Keywords were searched in the title or abstract fields, with wildcards allowed on either side of the search terms. The used keywords are listed below. Some keywords were duplicated for different spellings. This search returned 32,268 total records (11,093 unique) with 55 unique Country Codes.

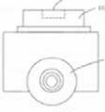
automated storage
automated retrieval
automated equipment
order picking system
order picking station
fulfillment system
fulfilment system

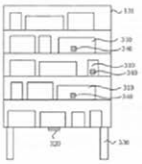
[Fig. 1] Montage of patent images available on the Google Patents Website. Image supplied by author.

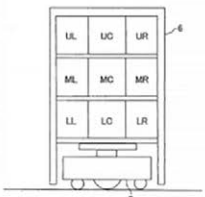


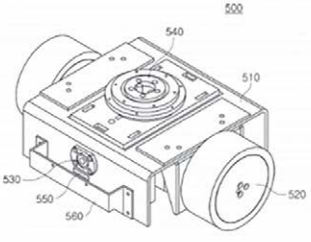

FIG. 12
Capture audio data
Send audio data
Perform speech processing to determine first text data
Determine first command using first model
Determine first confidence score associated with first command
Determine second command using second model
Determine second confidence score associated with second command
Determine first confidence score higher than second confidence score
Select first command
Determine first process corresponding to first command using first model

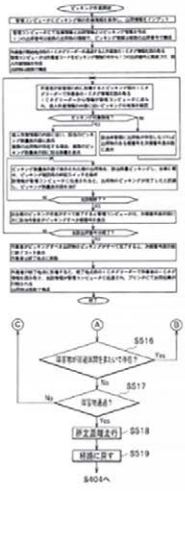

FIG. 4C


FIG. 2


FIG. 3


UL
UC
UR
ML
MC
MR
LL
LC
LR
6
7


500
540
510
530
550
560
520


S516
S517
S518
S519
S404A

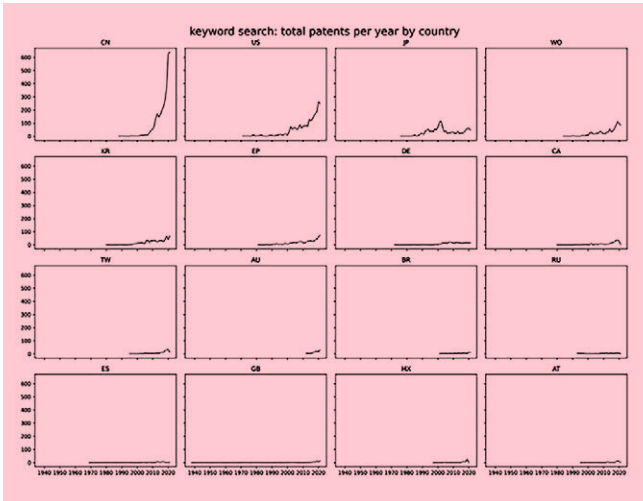
order fulfillment
order fulfilment
warehouse management
warehouse control
warehouse execution
picking optimization
picking optimisation
picking system
picking technologies

The plot in Figure 2 shows the total number of patents by year for a given country, using only the keyword search results (duplicates removed). The top-16 countries are shown by the total number of patent applications in this search. The date covers a year range of 1938–2021.

China shows a distinct increase in the number of patent applications, especially in the past decade. The United States also shows an increase throughout the past two decades.

These initial results match expectations of which countries have been increasing their output in terms of patents involving automation and logistics, however, more research is required to be able to draw any conclusions about the movements and shifts in these patterns.

[Fig. 2] Plot showing the total number of patents by year for a given country (1938–2021) using only the keyword search results. Image supplied by author.



ASSIGNEE SEARCH

The assignee searches attempted to pull records of specific interest to The Geopolitics of Automation project by searching for assignees. The selection of assignees is based on finding patent information related to Amazon, Alibaba, and affiliated companies as a basis for looking at automated warehousing and logistics. The goal here was to track some of the movements of patent applications across different assignees (companies and individuals) and see what locations (countries) appear over time. This search produced a total of 37,659 records (26,697 unique) with 21 unique Country Codes.

The plot in Figure 3 shows the number of patent applications by year for each assignee. The assignees are the top-16 by total number of patents for the assignee search. The data covers the range of 2004–2021. Amazon Tech Inc. submits a far greater quantity of patents than any other company that we identified in this search. This peaks at 3562 patents in 2019, which then drops to 2404 in 2021.

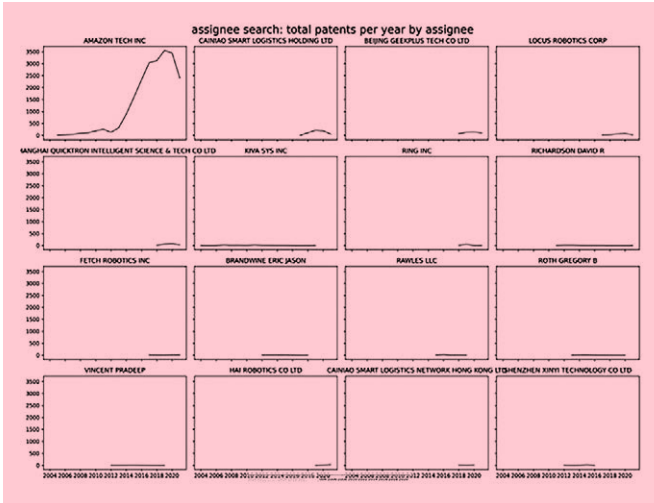
The plot in Figure 4 excludes Amazon in order to show more detail

of the other assignees. This shows fluctuation in the total number of patent applications per year, as well as many assignees submitting a lower quantity of patent applications in 2021, perhaps due to the COVID pandemic. More research would be required to further draw out these potential threads of inquiry.

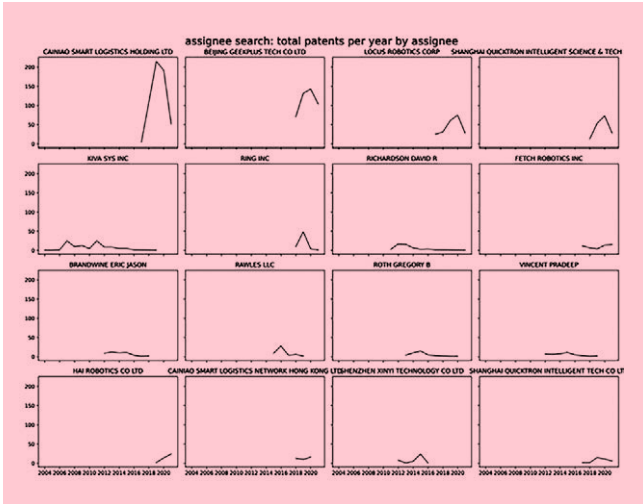
IMAGES AND MONTAGES

For the above keyword and assignee searches, we downloaded all images that were available on the Google Patents Website. This was done through an automated script that iterates through all publication numbers, visits the required page and downloads all associated images, plus a full PDF of the patent application, if available. From this process a total of 243,003 images were saved from 40,733 patents. These images could be used for further analysis of visual forms. They could also be used for machine learning applications that require large numbers of images, for example training an image classifier or generative adversarial network. One suggestion would be to train an unsupervised classification network such as DeepCluster in order to

[Fig. 3] Plot showing the number of patent applications by year for each assignee (2004–2021). Image supplied by author.



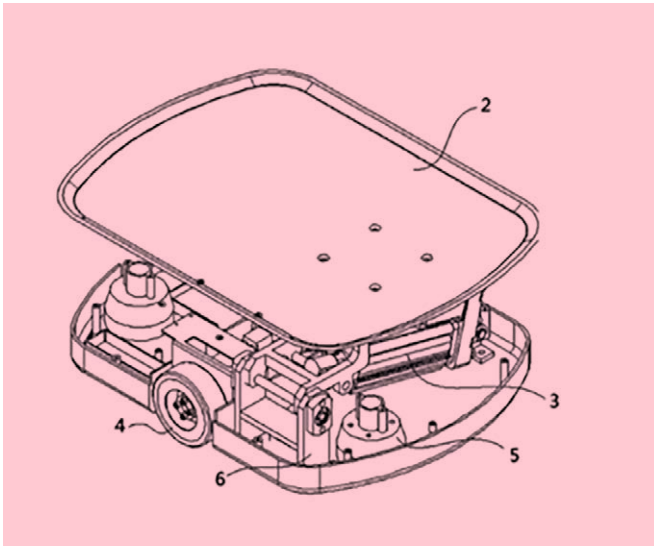
[Fig. 4] Plot showing the number of patent applications by year for each assignee (2004–2021), excluding Amazon. Image supplied by author.



identify a number of different categories of images that could be differentiated by machine learning.

Montages were then produced by randomly selecting 25 images from all of the downloaded images, and then saving them in a grid formation [Figs. 5–7].

[Fig. 5] Series of patent images available on the Google Patents Website. Image supplied by author.



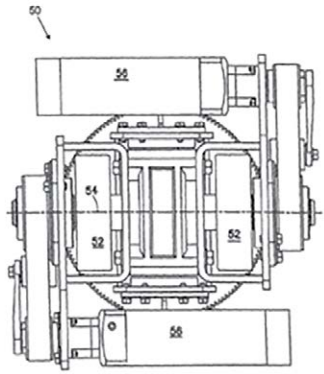


FIG. 17

[Figs. 6, 7] Montage of patent images available on the Google Patents Website. Image supplied by author.

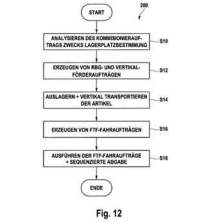
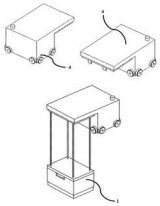
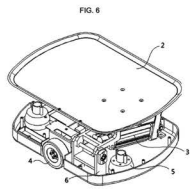
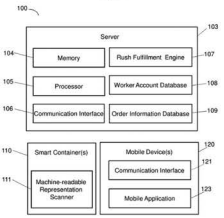


Fig. 12







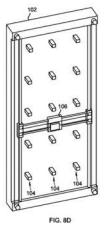
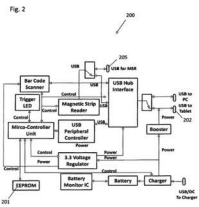
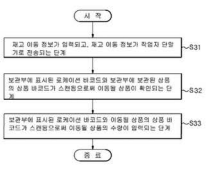
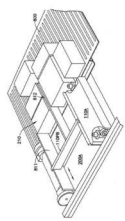
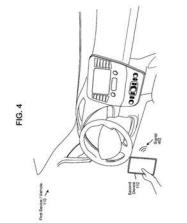


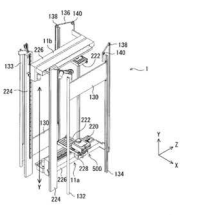
FIG. 8D











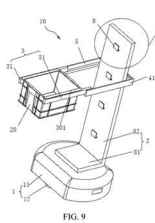
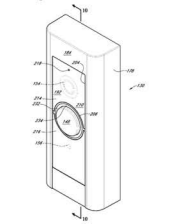
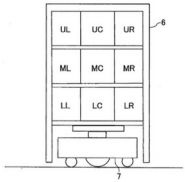
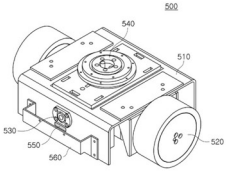


FIG. 9









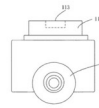


FIG. 2

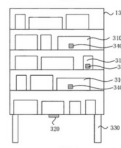


FIG. 3

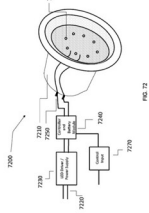


FIG. 72

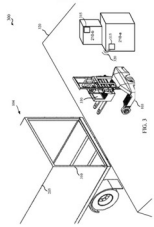


FIG. 3

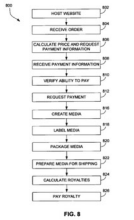


FIG. 8

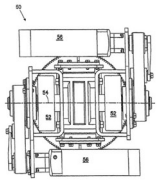
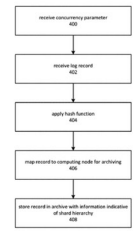
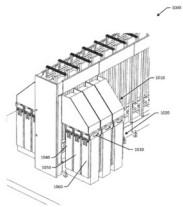
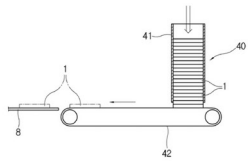
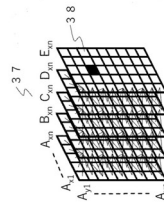


FIG. 17









03.3

PROMPT-SHIFTING: FROM REPRESENTATION TO OPERATION

Chloe McFadden

Commercial text-to-image generative AI applications are frequently imagined as representational systems. Via platform rhetoric and user interfaces, we are encouraged to engage these systems as translators or visualizers of our own representational desires. Google frames Gemini as having the ability to bring users' imaginations to life, for instance, and Midjourney's Discord interface requires users to type in the command "/IMAGINE" to input prompts. This framing via representational desire reduces our ability to critically perceive the operations of text-to-image models and read image outputs as operational. By way of immanent critique, I present prompt-shifting as a conceptual and practical technique for reading and engaging text-to-image outputs as operational images.

REPRESENTATIONAL DESIRE

Framing my practice-based experimentation are the following dimensions of the representational desire of text-to-image models:

1. Representational desire decentres the operations

of the model in favour of the control of the user. Promises to bring each individual's imagination to life obscure the centralizing tendencies, operations, and limitations of the application. Prompt-engineering guidelines and instruction manuals frequently construct a vision of interaction in which the user must simply find the correct or most accurate combination of words to achieve their desired image.

2. Text-to-image models become world models. These applications inherit a common-sense positivism from photography in which representational images are conflated with their 'real-world' referents. This is stratified by the marketing rhetoric of platform-AI that exalts

realism and prompt-adherence as evidence of technical innovation, and markets models as producing "exceptionally accurate images." Together, these practices and rhetorics construct a claim in which words hold obvious, stable, and universal correspondences with images and aesthetics and that these correspondences are accurately captured and reproduced by text-to-image models.

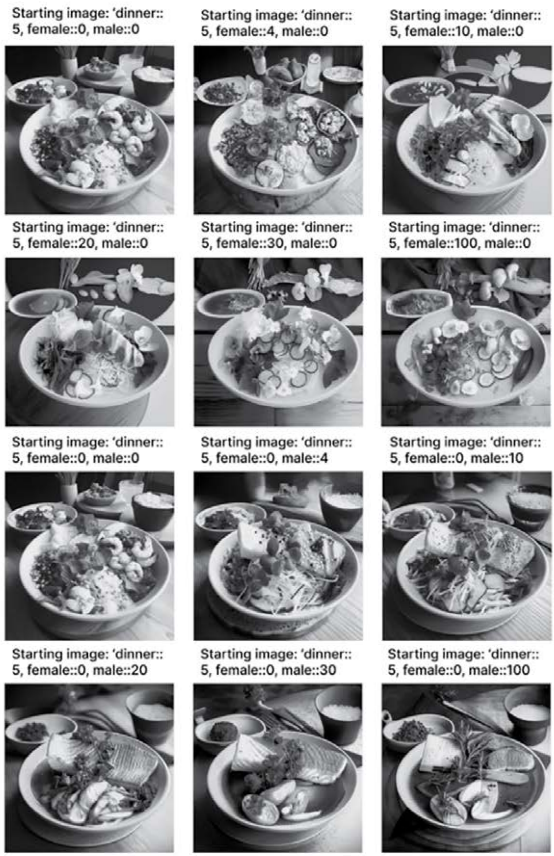
3. Models are evaluated by how well they meet our representational desires. Realism and hyperrealism become the default aesthetic expectation and models are continually optimized towards the median representational desires of users. As argued by Joanna Zylinska in

"Diffused Seeing: The Epistemological Challenge of Generative AI," even critiques of bias, failure, and uncanny outputs risk falling into the representational trap of generative AI applications or perpetuating the narratives of tech companies in which a perfect world model is achievable with enough data.

PROMPT-SHIFTING

At the conceptual level, prompt-shifting redirects attention away from representational desire and towards operational curiosity. Rather than visualizing our imaginations, this technique shifts attention away from outputs towards the processes and contexts of their production. Practically, it involves slowly introducing and varying the influence of certain subjects and aesthetics to probe how the learnt patterns and combinations of specific semantic terms are activated within

[Fig. 1] Prompt-shifting experiment conducted using Midjourney (V6 model). Top row features images generated with increasingly influence from the term "female." Bottom row features images generated with increasing influence from the term "male." Image supplied by author.



generative AI models in ways that manifest visually. This practice-based approach draws upon Trevor Paglen's articulation of operational images—or images made by machines for other machines—and Erik Salvaggio's method of reading AI images as infographics.

By subtly increasing the weights of descriptive terms like "female" or "male" in the prompt, Figure 1 registers how the social and aesthetic encodings of these terms can be exposed and critiqued through prompt-shifting. In my practice-based experimentation, I use prompt-weighting in ways not intended or well documented by text-to-image applications. Prompting guides frequently advise users when creating prompts to avoid weighting individual terms too highly as this results in other terms in the prompt being ignored. However, such an effect can be creatively fruitful when engaging image-to-image (img2img) models, as the subject depicted in the original image remains but is increasingly influenced and altered by weighted terms.

In this experiment, I began by generating an image of "dinner" before iteratively increasing the weight of the

terms “female” and “male” respectively. As the term “female” gains greater influence, our dinner scene slowly diminishes until we are left with a plate of flowers. Whereas the “male” dinner scene features a changing protein source resembling salmon, ending with a plate of wooden objects, meat, and sprigs of garnish. By tracking and tracing what changes (size, colour, shape, object, tone), why these changes may be occurring (the dataset, stereotypes, biases), and how these changes alter our interpretation of the images, we can begin to sense generative AI not as limitless or obedient to our imaginations, but rather as operational and partial.

NON-UGLY APPLES

One such way I position prompt-shifting as enabling an operational curiosity is in terms of how it foregrounds a testing of representational assumptions that regulate how commercial text-to-image models are perceived and engaged. Through appeals to “prompt-adherence” and “accuracy,” text-to-image applications are imagined as simply translating words into their corresponding visual representations. The

control of the user is foregrounded and the operations, biases, and patterns of the model are decentred. If the output image is not in line with the user's vision, through prompting guides and practices, this misalignment is presented not as a limit of the system but as the user's failure to conform to its representational logic. The problem is how the user asked, not what the system can do. This redistribution of misalignment creates a magical perception of text-to-image models in which prompts become magical phrases—"open sesame"—or formulas: dog + beach + realistic + 35mm film = output image.

Via this magical perception articulated through trained phrasing, positive and negative prompts are imagined as adding or subtracting certain influences and features from an output image: dog + beach + realism + 35mm film— people = output image. Such explanations ignore the operations from which these output images arise. Thinking representationally in symbolic codes, we can imagine "-people" resulting in an image where no people are featured. However, thinking

operationally, what does it mean to "add" or "subtract" an influence from the creation of an image? Across various prompting guides and user community forums, a rather pragmatic answer emerges in which negative prompts are useful for avoiding unwanted features. Yet when observing common negative prompting practices, this pragmatic framing becomes analytically troubling. For example, the Easy Diffusion (a user friendly installation of Stable Diffusion) Github page offers the following "useful" negative prompt: "Deformed, blurry, bad anatomy, disfigured, poorly drawn face, mutation, mutated, extra limb, ugly, poorly drawn hands, missing limb, blurry, floating limbs, disconnected limbs, malformed hands, blur, out of focus, long neck, long body, mutated hands and fingers, out of frame."

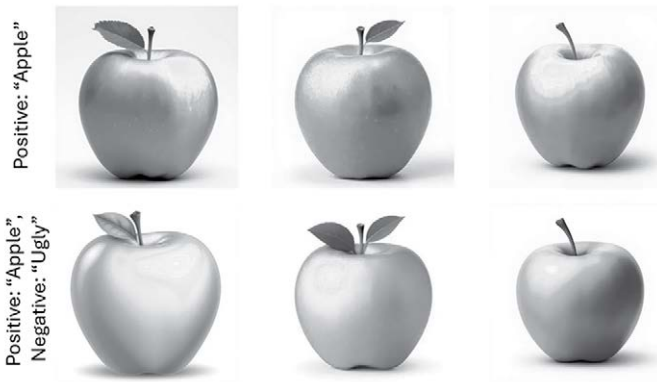
While disturbing, such negative prompts are highly normalized, with many hosted model demos and workflows frequently containing such negative prompts by default. Users, guides, and platforms frequently explain and justify such prompts by pointing to the tendency for generative AI applications to render

the anatomy of subjects in inaccurate or uncanny ways. These negative prompts are then simply a way of removing these uncanny or undesirable qualities. However, is that all these negative prompts remove? When subtracting from the generative image, what takes its place?

Figure 2 attempts to answer these questions by probing the operations of text-to-image models. I generated pairs of images using fixed seeds, comparing outputs produced with the prompt "+apple" against those generated with the prompt "+apple -ugly." I repeated this process across multiple seeds to probe how the negative prompt "ugly" reshaped the resulting images. Noticeably, the generated "non-ugly" apples are not just more "beautiful" or realistic, but also diverge significantly from the generated control apples in their styles and features. "Ugly" as a negative prompt is both subtractive and additive as it can be seen influencing various parts of the image, such as shape, content, colour, detail level, texture, style, lighting, and shadow.

Exposing negative prompts as both subtractive and additive makes various

[Fig. 2] Prompt-shifting experiment conducted using the UMO model demonstration by UXO Team hosted on Hugging Face. Top row features images generated with the positive prompt “apple.” Bottom row features images generated with the positive prompt “apple” and negative prompt “ugly.” Image supplied by author.



operations of the model sensible. Rather than being processed individually and sequentially, across various operations of the model the words (tokens) in the prompt become entangled and affect the image generation simultaneously. This is to say that "+apple" and "-ugly" influence how each of these terms are embedded and mutually determine the trajectory of the denoising process. Furthermore, rather than subtracting the influence of the term "ugly," this negative prompt adds an opposing conditional signal that moves the denoising trajectory away from regions associated with the term in the latent space. Produced through processes of machine learning, latent space is a mathematical distribution of data points in which the resemblance or similarity of features determines their proximities. By analyzing the effects of the prompt "-ugly," we can ask: when the denoising process is pushed away from "ugly" regions, where does it end up within the latent space?

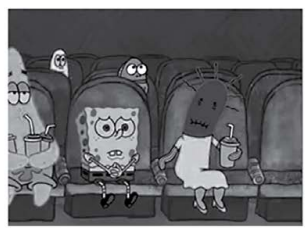
These additive and subtractive effects invite further considerations of why the prompt "-ugly" manifests in certain visual patterns. In his text "How to Read an AI Image," Eryk

[Fig. 3] Collage of images labelled “ugly” collected from the LAION dataset retrieved using https://haveibeentrained.com/.











Salvaggio argues that all generative AI images are infographics about their underlying datasets. As datasets used to train image models frequently consist of image-text pairings created by internet users, AI images can be read as visualizing an "internet consensus." Models then generate centralizing and generalizing effects, as the median socially constructed ideals or stereotypes determine what can be generated with clarity and consistency. The model by default is always-already exclusive.

To understand why our "non-ugly" apples result in specific stylistic and content changes, we must understand what the centralizing consensus of "ugly" is. Probing the LAION dataset reveals a vast array of images of memes, people, TV shows, advertisements, Christmas sweaters, animals, and more that have been captioned as "ugly" [Fig. 3]. Scrolling these images, we can begin to consider how our "non-ugly" apples may also be less human, less Christmas sweater, and less meme than our control apples.

Such a practice may also enable reflection upon how certain bodies, identities, and subject matters are

[Fig. 4] Series of images generated using Midjourney (V7 model). Left image features images generated with the positive prompt "Sweater Ugly," centre image features image generated with the positive prompt "Sweater." Right image features images generated with the positive prompt "Sweater" and negative prompt "Ugly." Images supplied by author.



Positive: "Sweater Ugly"



Positive: "Sweater"

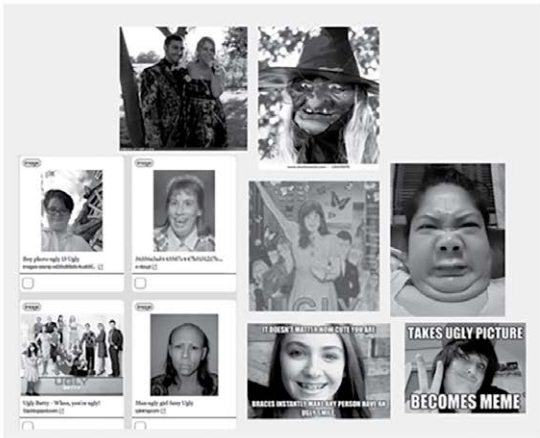


Positive: "Sweater", Negative: "Ugly"

denigrated by 'pragmatic' approaches to prompting justified by representational desire. Figure 4 depicts another prompt-shifting experiment motivated by such a line of questioning in which I generated images of "sweaters." Three series of images were generated using the same seed, with variations of prompts: "sweater ugly" (left), "sweater" (centre), "sweater -no ugly." Here, we observe a masculine figure emerge within the "ugly sweater," with distinct markings on his face. Such an output makes visible how 'pragmatic' explanations of negative prompting which foreground representational desire may perpetuate and renew ableist and eugenic logics by excluding certain bodies, forms, and contents.

Returning to images of people captioned as "ugly" in the LAION dataset, we can begin to trace how the operations of models and operations of users may be co-constructing new "ugly laws" or hegemonic operations [Fig. 5]. Within the platform and user interactions, text-image pairings, prompting practices, content detection and censoring protocols determine which subjects can be exposed for public viewing.

[Fig. 5] (Top) Images labelled “ugly” collected from the LAION dataset retrieved using https://haveibeentrained.com/. (Bottom) Image generated with the prompt “Sweater Ugly” using Midjourney (V7 model).





LOGISTICAL OPERATIONS

In "Performing the Automated Image," Anna Munster and Ned Rossiter argue that "platforms such as Midjourney come to operate logistically." The outputs of these platforms are enabled by logistics—the scraping and organizing of data from the internet, the supply chains and manufacturing of GPUs, and the underpaid and free labour of contract workers and users to develop and optimize their applications. Munster and Rossiter show how these enabling logistical operations also structure platforms as supplying, filling, and distributing orders as media is reduced to "the supply and fulfilment of parameters." The parameterization of image mediality they describe presents a new way of thinking about prompts and prompt-shifting. Via this framing, "non-ugly" is not a prompt—a description, instruction, or cue—but rather a parameter—a boundary, characteristic, or value. Prompt-shifting may offer a way to probe the logistical operations of text-to-image applications by exploring how parameters bleed and blur into one another via their

entangled and simultaneous fulfilment and distribution.

Within their text, Munster and Rossiter present outputs from a collaborative research project, ChatFOS (Fulfilment Operating System/Full of Shit). Developed by Zoe Horn, Liam Magee, Anna Munster, and Ned Rossiter the research project explores if and how synthetic media itself might be thought of as logistical. The experiments that follow extend this question through practice-based probing of text-to-image applications. To explore text-to-image platforms as supplying and fulfilling parameters I began by taking one prompt developed within the ChatFOS project and splitting it into its separate parts:

> A [worker] in an [automated] [warehouse] for [sorting], [storing] and [fulfilling] [global] [orders].

Using Midjourney (V7 model) I then generated an image using each separate [word] as a prompt using the same specified seed [Fig. 6].

By separating each parameter from a prompt into its individual parts,

[Fig. 6] Series of images generated using Midjourney (V7 Model) with the prompts “worker,” “automated,” “warehouse,” “sorting,” “storing,” “fulfilling,” “global,” and “orders.” Images supplied by author.



the styles, compositions, concepts, and contents of such parameters can be explored. Here, the text prompts are encoded individually, removing the contextuality introduced by transformer self-attention layers in multi-word prompts. This lack of context results in large divergences in style and content, especially prominent in images seeded by prompts containing homonyms. For example, the "fulfilling" image depicts a feeling of fulfilment rather than a fulfilment of orders and the "orders" image depicts an authoritarian rule rather than a shipment order. While self-attention transformations are positioned as effectively removing the ambiguity of homonyms or context-specific meanings, the entanglement of training data complicates such claims to clarity. Training data labelled either as orders (rules) or orders (shipping), for instance, may contain similar content and aesthetics (documents, labels, compositions, colour palettes, lighting). As such, when generating images featuring the parameter orders (shipping) how may the aesthetics and patterns of orders (rules) bleed into and inform generated outputs?

Having explored each parameter separately, I then probed how these parameters are fulfilled simultaneously by adding one word at a time to the prompt via prompt-shifting [Fig. 7]. Each additional parameter can be observed changing the colour, composition, contents, and camera angle of the image. Noticeably, the structure of the prompt is mirrored in the structure of the image: as the worker is gradually dwarfed by the non-human elements of the prompt this is reproduced in the generated outputs. Organized in a stack, the images read like a storyboard, and we can almost imagine a camera zooming out and panning away from the worker towards the scale of operations manifesting within the warehouse. By the 6th image, the worker is no longer visible, replaced by evidence of labour (boxes, conveyor belts, forklifts) and speed (motion blur). Munster and Rossiter argue that the "hyperrealism" of generative AI images "can also work as an analytic device and speculative synecdoche or diagram for this logistical operativity of generative AI." This prompt-shifting experiment can be read as such. The progressive zoom

[Fig. 7] Series of images generated using Midjourney (V7 Model) with iterative prompt "Worker automated warehouse for sorting, storing and fulfilling global orders."



out away from the worker towards a generalizing scale of operations mirrors the operations of the platform that enabled its production.

Prompt-shifting as a technique resists the allure of representational desire embodied by generative AI platforms that promise to bring our imaginations to life. Despite this distinction, prompt-shifting is still very much a practice of imagination. Prompt-shifting is performed by paying close attention to what is (or what could be) above and below the surface. While some elements are visible (inputs, outputs, publicly available datasets) many are inaccessible and require speculative acts to conjure action. Even that which appears to be visible is frequently only partial. Although the three "non-ugly" apples generated allowed me to tease out certain patterns, it is possible that another three generated "non-ugly" apples would lead to entirely different lines of thought. Similarly, while analyzing datasets can feel immensely productive and demonstrative at times, their immense scale and density put me at risk of apophenia. Effectively ordered via immense amounts of structured

operations, probing these applications nonetheless often feels muddy and floaty. It can be difficult to find a firm footing to draw insights and devise critique. Amidst this universe of assumed calculation and improvized determination, prompt-shifting offers a mode of engagement that is less interested in coaxing out "truths" from a model to critique. Rather, it foregrounds a dwelling in the murky conditions from which outputs and claims emerge as a productive strategy of intervention.

03.4
WAREHOUSE SIMULATIONS
Luke Munn

RAMP [Fig. 1]

Chutes in Fulfillment Centres attempt to corral packages into a smoothly logistical regime, keeping flows going while avoiding damages. This prototype uses a rigid body physics engine to simulate these chutes. Users can click any two points to draw a chute, alter the package drop rate, and track their metrics. Packages of different sizes and densities fall from above, are picked off the floor by a labourer, and sent offscreen. Packages with high speed or angular velocity become damaged and are flagged red. The simulation highlights the challenges of contemporary logistical empires and the contingency that can emerge in the midst of control.

DRIVES [Fig. 2]

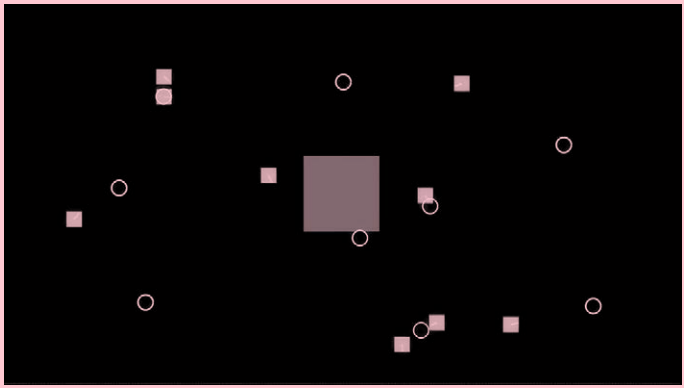
This prototype simulates an Amazon sorting warehouse, where robots or "drives" in industry parlance, pick, sort, and transport products. Core to the simulation is "Optimal Reciprocal Collision Avoidance," an algorithm funded by DARPA, the Army, and Intel, which attempts to solve the problem of moving many agents around a space

without colliding. This simulation surfaces several variables that are typically hardcoded, allowing users to alter neighbour distance and the time looked into the future to check for potential collisions. Users can click to run with random drive locations, or specify their own by clicking. The simulation highlights the challenges of contemporary logistical empires and the contingency that can emerge in the midst of control.

[Fig. 1] http://www.lukemunn.com/ramp



[Fig. 2] http://lukemunn.com/automate



04

Patent Politics

Patents are legal technologies that enclose futures not yet born. As anticipatory devices, patents assert control over the territory of invention. More often the economies staked out are stillborn, never to emerge beyond the theatre of arbitration in the event of dispute. Parading an aesthetics of minimalism, patents distill an idea of action as bare essence. The sequential logic of instruction, of rules on how a thing works, registers affinity with the family of algorithms. Closing down options, patents seek to define the relation between cognition and invention, production and command, capital and labor according to supranational juridical regimes. All too often such gestural authority fails in the face of defiant states and cultures of piracy. Patents provide a blueprint, an operational diagram, and legal certification with currency for speculation within finance capital. Patents contribute to an underlying grammar that organizes the world logistically.

Logistical Episteme

With a prehistory in the science of cybernetics, the logistical episteme is a material condition that modulates institutional discourses, industrial objectives, cognitive tendencies, and social experiences. The logistical episteme consists of multiple elements or component parts. Each have their unique properties and propensities, yet they may also combine and intersect to constitute an interoperable system. The extent

to which this is possible comes down to the power of standards and protocols, the kernels of a computational architecture that functions as the meta-layer or topological skin that binds the surface of otherwise discrete parts. The logistical episteme operates as a grammar of organization, calculation and movement designed to service capital accumulation. As an organizational architecture that valorizes efficiency, the logistical episteme structures relations within regimes of near real-time.

Distribution

How might we think the idea of a post-cybernetic paradigm or condition in terms of the politics of distribution? Does the cultural and analytical technique of conjunctural delineations sufficiently describe and conceptually furnish prevailing and emergent social-technological conditions of distribution and modes of expression? What are some of the key sites, material forms, and modes of subjectivation that instantiate technologies of environmentality as that which surrounds the surrounding environment? What is the scene of power operative in the relational dynamic between these domains? How might entropological encounters take seriously the material effects of an epistemic transformation that is a key to and possibly constituent force in the dynamics of polycrises of the present? How, indeed, to engage with a world that is simultaneously always-already multi-scalar?

Modeling Worlds

Models are trained to minimize the difference or loss between the original data and its reconstruction from the latent space. As data are processed, data points with similar characteristics are clustered and located more closely to one another, while those that are dissimilar are located farther away. The distances between data points in the latent space are represented mathematically, as vectors, in the model. This organization of worlds immanent to machine operations makes it more efficient to reconstruct data based on shared features, which is required for the generation of new data. In this way, the arrangement of latent space is determined by how the model learns. That is, when data is mapped to a latent space, models and learning algorithms instruct the training process on how to preserve relationships within the data, allowing the model to efficiently encode, reconstruct, and geånerate data based on these learned patterns. The world of the model is a world executed by the repetition of training routines on data made malleable. Such worlds can only submit to the command. This does not diminish the transformative potential of models unleashed into the wild.

Metamodels

From models to metamodels, worlds are made. The logistical episteme models worlds as world models. The tension between models and metamodels is one in which aesthetics and movement enter computational scripts in

the form of entropic perturbations such as affect and sensation, which have an unsettling aesthetic tendency with regard to the closed world of models. The possibility of contingency is intrinsic to the operative logic of metamodels as environments in which techniques of capture and accounting run in tandem with the plasticity of expression galvanized by the presence of models yet not subsumed in any totalizing way.

Generation

Generation creates new data points by sampling from the probability distribution learned by a model during training. The process and mechanism of sampling varies depending on the type of generative model: a model that uses autoregression, like GPT (Generative Pre-trained Transformer), can generate new text by predicting the next word in a sequence, given the context of the previous words; a diffusion model might start with a noisy version of an image or text and gradually declutter it to generate a clear and coherent output. Sampling registers how new generations of data resemble their training data, in the sense that they are drawn from the learned distributions but are not exact copies. New data are constructed from the patterns, structures, and features of the training dataset. The model only acts to generate, as the training data implicitly instructs. The model is a performance without any theatre.

Computational Organization

Protocols are technical rules of digital communication. Standards index institutional and industrial agreements that formalize protocols, ensuring that capital has markets connected by reproduceable commodity forms in communication through processes of exchange and interaction. Protocols and standards are the foundations of platform interoperability. However, these techniques of governance offer no guarantees. In other words, they do not ensure market growth, expansion, or competition. Contingency always haunts the assumed hegemony that attends interoperability. Manifesting as inoperability, contingency takes many forms: technical breakdowns and glitches, labour strikes, environmental catastrophe, inventory blow-outs, supply chain disruptions, border conflicts, and the like. Inoperability is the outside of logistical interoperability.

Politico-Juridical Regimes

The computational dream of politics is to program outcomes. Infused with ideological predispositions, the politico-juridical layer of the logistical episteme consists of legal standards, institutional settings, and inter-state alliances held captive by Silicon Valley and its Chinese counterparts in Shenzhen and Zhongguancun. Where politics seeks control defined by the seemingly unambiguous territorial borders of the nation-state, the border also instantiates

"the contingency of the state's authority and control over the spatial domain which lends to it the title of statehood." How might we elaborate a more expansive concept of politics that takes into account the borders, the limit horizon, of the episteme as it figures through circuits and technologies of global logistics? Such an undertaking includes an analysis of the politics of parameters, of the ideology of code, and the inscription of computational grammars on the surface of human expression.

Industrial Systems

How does the logistical episteme organize industrial sectors? Enhanced efficiencies, optimization of performance, granulated systems of measure, disaggregated and reaggregated reserves of labour power, just-in-time modes of production and distribution, just-in-case anticipations of unforeseen disruptions. These are among the core features of industrial techniques enlisted to expand the wealth of capital and extract value from the social layer of the logistical episteme. The financial layer would be another to consider in relation to the infrastructural layer of data centres that make possible technologies such as high-frequency trading, which in turn affects logistical calculations and technologies of measure used within shipping industries and supply chains in which market forecasting and speculations on delivery times are routine.

Machine Value

The logistical episteme registers a machinic theory of value. Arguably, a machine theory of value rather than labour theory of value can better account for how contemporary capital is fused to computational conditions. As a complex and historically contingent system, the machinic apparatus or dispositif comprises a diagram of relations in which the production of value cannot be reduced simply to inputs and outputs, to the cost of labour indexed in the pricing of commodity forms. In short, a labour theory of value is not sufficient in analyses of contemporary capital. Rather, a machinic theory of value needs to be devised to make intelligible how value is generated and, importantly, accounted for by technical systems of measure, quantification, and recombination. A complex and distributed array of variables crystalize, however fleeting and momentarily, as exchange value. Yet exchange value holds an inverse relation to the heterogeneity of the general intellect and the multiplicity of elements that coalesce as the logistical episteme. The grammar of computational interoperability common to cybernetic and logistical epistemologies is one that subsumes the performance of labour as value into machinic operations. Yet such a grammar and operativity is also confronted by entropic dynamics of environment.

Entropic Environments

Contingency and entropy, crisis and catastrophe. These are the underlying conditions that prevail with increasing frequency in the cybernetic century. The disruptive force of environment is not necessarily asserted simultaneously, indeed perhaps rarely at all. Otherwise the temporal axis of epistemic elements would function as a vector of equivalence. Rather, the entropy of environment organizes relations in ways that radically flip the logistical episteme from a grammar of interoperability and equivalence enabled by computational and infrastructural protocols and standards into a nascent grammar of inoperability figured by environmentality as an inchoate articulation of governance. The environment performs as a "living prototype" (Keto) against which the logistical episteme is cast as an adaptive system of organization. The material exigencies of environment force the logistical episteme to pattern the world as a dialectic between command and control and contingency and entropy. This is what makes the subject of the logistical episteme so delirious: Populations are harnessed as labour power, their expressive capacity subsumed by processes of datafication. Yet the milieu in which labour is situated is an environment that includes machines and living organisms. Subjugation is never total. Systems of control are in perpetual flux between states of relative equilibrium and entropic disequilibrium (Luhmann).

World-Systems Organization

To what extent can we understand the logistical episteme as a world-system? A world-system is not to be confused with something like a totality of integrated planetary stacks. Nonetheless, the logistical episteme organizes the world-as-system, albeit one not conforming to spatial models of centre and periphery that are the hallmark of analyses on geopolitics and geoeconomics by Wallerstein and others. When coupled with logistical infrastructures, software systems, management discourses and practices, finance and commodity markets, labour routines and rebellions, the logistical episteme shares something with world-systems theory insofar as it accounts for dynamics of interoperability, connection, distribution, and power that manifest expansively across spatial scales and temporal patterns. Yet unlike world-systems theory, the logistical episteme is not limited to a multidisciplinary perspective that critically explains how geopolitics and geoeconomics are comprised of spatial contests of power between and across states. With its constant switching and rerouting of supply chains, always responding to contingencies, the logistical episteme flips with such frequency between temporalities of speed and stasis that valorization of the local is rarely possible in any assertive capacity. Movement, flows, circuits. These are the key spatio-temporal tropes of the logistical episteme.

Geopolitical Media Theory

Geopolitical media theory at the current conjuncture is media theory conditioned by the logistical episteme. Software, infrastructure, labour. These three primary pillars cast logistical industries into new geopolitical constellations of power. From these empirical, political economic, and social foundations emerge the key coordinates of a media theory that makes intelligible contemporary geopolitics and operations of capital. Communication is at the core of cybernetic epistemology. Similarly, communication is key to the logistical episteme. The logistical episteme furnishes cybernetics with material forms of operation conditioned by malfunction and misfeasance, contingency and calculation. In so doing, the logistical episteme maintains a mathematical grip on a world that never surrenders to control, yet is reproduced by its techniques of organization.

Editors Anna Munster, Brett Neilson, and Ned Rossiter
Design Paul Mylecharane at Public Office https://public-office.info
Publisher Low Latencies book series, Open Humanities Press, London
Printing Tallinn Book Printers
Copyright © 2026 Anna Munster, Brett Neilson, Ned Rossiter, and respective contributors.

With support from: Australian Research Council,Western Sydney University, University of New South Wales, Università di Bologna, Humboldt-Universität zu Berlin,Technische Universität Dresden, and Erasmus University Rotterdam.

This is an open access book, licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International license. Under this license, authors allow anyone to download, reuse, reprint, modify, distribute, and/or copy their work so long as the authors and source are cited and resulting derivative works are licensed under the same or similar license. No permission is required from the authors or the publisher. Statutory fair use and other rights are in no way affected by the above. https://creativecommons.org/licenses/by-nc-sa/4.0





Open Humanities Press is an international, scholar-led open access publishing collective whose mission is to make leading works of contemporary critical thought freely available worldwide. openhumanitiespress.org

Freely available online at: www.openhumanitiespress.org/books/series/low-latencies

packetpolitics.space
admin@packetpolitics.space
ISBN (Print)
978-1-78542-169-3
ISBN (PDF)
978-1-78542-168-6

All art is prior art. Every invention, every image, every algorithm carries the trace of a precedent, the labour, struggle, and ingenuity on which it is built. Patent law names this debt, encoding a structural anxiety about originality into the very system designed to reward novelty. In the territorially divided world of AI invention, overlapping and competing patent claims accumulate into thickets or fogs not easily navigated by small players. Platform sovereigns unleash exploits to extend their reach into territories, labour markets, and imaginaries that states can neither claim nor control.

Warehouses are the automated theatre of this geopolitical future present. They are saturated spaces—technical and shot through with labour power. Their automated vision generates worlds specific to the logistical circuit before any human interpreter arrives. These worlds are not representations of labour but its continuation by other means. Nothing in the image waits for confirmation. *Prior Art* cuts warehouses inside out, turning containment to contingency, formatted worlds to computational horror. Termination is not an alternative.



Open Humanities Press
Low Latencies, 2026