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Where Capital Slows: An Ethnographic Reorientation of Amazon's Inbound, Stow

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by

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Table of Contents

Introduction

It's 8:50pm, and a solitary worker drives a security car up and down the long rows of parked cars. I'm sitting in one of the empty picnic tables in the break area at the front of the lot, watching. The driver methodically winds through the expanse of waiting cars, never exceeding the 10 MPH limit posted on signs in between every row. A massive building looms over the parking lot, covered mostly in windowless gray and white panels with square tinted windows at the front entrance. On its back side, a constant rotation of rumbling trucks wait for their turn to back their trailers into docks to be alternately unloaded and reloaded with boxes of items. But on this side of the warehouse, it is mostly quiet. Occasionally someone wearing a blue manager vest will enter or exit from the front entrance. Sometimes a crash from a heavy pallet on the concrete floor, or the chirp of an error alert from a worker's screen ("improperly scanned item") leaks through the walls of the warehouse. But for the most part, the only sound is the humming of the security car's engine as it gently tips over sharp yellow speed bumps.

It's 8:55 now, and a flood of people suddenly pour out of the front entrance, filling the formerly motionless break area with movement and voices. The crowd spills out in every direction, and many people go to sit alone at tables or in their cars. Some pull out their phones, several immediately launching into phone calls. A group of older women walk to their cars and come back with coolers and containers of food, which they set up across several picnic tables along with clear Amazon-approved plastic tote bags. Several families gather together, the younger people sitting on the ground as they eat and talk. A large group of people stand and sit in the smoking section, and looser clusters of conversation form there as they smoke and talk about

work and not work. Someone runs to get something from their car, and their friends laughingly shout something at them from across the lot.

After a little time, the pace of everyone's activity begins to subtly accelerate. The women at the tables begin to stand and gather their containers. Other people make last-minute trips to their cars. In scattered loose synchronization people begin to put out their cigarettes, say goodbye to their phone calls, let their conversations trail off, and stand. By 9:14, everyone is walking back towards the front entrance and disappearing into the building, and the tables empty.

It's 9:15 and the parking lot is quiet again. A muffled chirp sounds from inside the warehouse.

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Much of my fieldwork for this project was done without my knowing it. I began working at Amazon in the summer of 2020, a few months after the pandemic sent me home from my college dorm. The moment was marked for me by repeated demonstrations of capitalism's tolerance for mass death, manifest in the police violence that prompted and assaulted the George Floyd uprisings, hundreds of thousands of Covid deaths, and capital's reliance on the exploitation of those forced to risk their health to work. The disorganization and consequent disempowerment of workers revealed itself as the central collective challenge of the moment, and I became eager to involve myself in this project. At the same time, after months of leaving my home only for occasional grocery runs, I needed a job. My political and material interests

combined as I clicked through the Amazon jobs website and found multiple immediately-hiring full-time night shift positions for "Amazon Fulfillment Center Warehouse Associate."

Amazon's hiring process was one I would come to be very familiar with. There are no interviews. Instead, applicants search through amazon.jobs for nearby positions and select their shift time from the available options, and after completing a brief online orientation are presented with a "preliminary job offer." Applicants then must come to the warehouse employment office, where they provide work authorization documents and submit to a drug test. Pending approval on these final steps, they are automatically emailed a start date.

I completed this process, and worked at Amazon from late June to mid August. The short length of my time at Amazon is not unusual. Amazon warehouses have famously high turnover rates, a phenomenon that became easily understandable after my first few days in the warehouse. The work is mentally and physically repetitive, painful, and regularly injurious (Al Elaw 2020). The work environment is deeply isolating, and the high turnover rate and physical layout of the warehouse makes it difficult for workers to forge connections with one another. Workers are not permitted to wear headphones, though some still do, hidden under hats or hair. Workers are constantly surveilled, and their time and bodily movements are tracked with an overlapping web of metrics and algorithms of control. The shifts are long, about 10-12 hours at a time, often deep into the night (Guendelsberger 2019). Many workers, like myself, have commutes of around an hour, meaning the four-day weeks are a near continuous rhythm of working, driving, eating, sleeping, driving, and working. I remember telling a more experienced worker that I was starting to have dreams where I was opening boxes and stowing items one at a time. "That'll happen," she replied.

After that summer, I became increasingly interested in efforts to build worker power at Amazon, and academic work connected to or in service of these struggles. I discovered the work of critical logistics scholars like Charmaine Chua, Jasper Bernes, Deborah Cowen, Laleh Khalili, and Alberto Toscano. This work, which reveals the primacy of the logistics industry in global supply-chain capitalism since the 1980's so-called logistics revolution. Cowen's book reveals how this process stretched production and circulation processes and structured the economy around a constant value-generating 'flow' of capital (Cowen 2014). As she shows, however, labor produces and constitutes this flow and its value, and the creation of a "global factory (125) contains critical consequences for the reality of work and latent worker empowerment.

Critical to the success of the global factory is the creation of a vision of the whole, or at least the imagining of one. As Cowen writes, "Mapping the 'total picture' is crucial in measuring supply chain performance" (2014, 109-110), or as Bernes puts it "to manage a supply chain means to render it transparent" (Bernes 2013). In order to smoothly and efficiently coordinate the constant transnational profit-generating production and circulation of capital, a view from the top must be created, a legibilization of the complex heterogeneity that constitutes supply-chain capitalism (Tsing 2009). As Tim Scott shows in *Seeing Like a State*, rendering complex subjects and worlds as legible so as to order "entangled lifeworlds towards productive goals" is a key task of states and other institutions of hegemonic power. This construction of supposedly holistic vision on the one hand is paired with the destruction of vision on the other; specifically, the disorientation of the local worker in global capitalism. The increasing planetary proliferation of "ecological simplifications in which living things are transformed into resources–future assets–by removing them from their life worlds," increases the legibility and extractability of the

planet for profit-driven corporations while further alienating ("disentangling") workers (Tsing 2016).

But equally important to a cogent analysis of the logistics revolution and the destructive logic of supply-chain capitalism is an understanding of the inherent fantasy and consequent vulnerabilities of this system, and a reorientation for the workers within it. Crucially, Scott argues that the ordering of lifeworlds into legible commodities and commodity-machines requires a "narrowing of vision." Using the example of German forestry, Scott writes that "the actual tree with its vast number of possible uses was replaced by an abstract tree representing a volume of lumber or firewood." The logistics industry's vision of the whole is accordingly revealed to be a "corporate fantasy," a vision that, in its efforts to produce legibility and profitability, is destined to fail at achieving totality (Cowen 2014, 203).

The vulnerabilities of supply-chain capitalism are revealed even in ordered "spaces of replication" (warehouses, factories, farms), and capital's failure at the construction of a complete vision can be seen plainly on the floor of an Amazon warehouse (Tsing 2016). In the meticulously designed node of capital circulation that is an Amazon warehouse, robots and humans are positioned to perform the labor of commodity flow in fluid integration, managed largely by algorithms programmed to maximize aggregate throughput. But my central argument is that this corporate idealized picture of the warehouse is always contested and necessarily incomplete. The Amazon warehouse is a fraught and contradictory project in which Amazon strives to escape its fundamental dependence on human labor through automation, machine-learning, and algorithmic management, while attempting to reduce the humanity of its workforce to productive, flow-generating, non-automatable labor. This reduction is attempted

with despotic control through constant datafied surveillance of workers' temporality and minute behavior. But as these technologies attempt to distill the humanity of worker's into only their profitable and non-programmable components, it remains helplessly reliant on that very humanity. The algorithmic management of the warehouse produces a warehouse that is organized in a way that is abstractly logical, but materially marked by frequent material chaos and crisis. The continued flow in these conditions is dependent on the ability of workers to manage and synthesize this chaos with continued commodity throughput. Additionally, workers constantly resist the despotism of algorithmic management in both implicit and intentional ways.

As a strategic response to the disorientation and alienation of the worker in global capitalism, Bernes proposed a "logistics against logistics, a counter-logistics which employs the conceptual and technical equipment of the industry in order to identify and exploit bottlenecks." This, Bernes suggests, would provide those resisting the domination of capital flow a practical value by offering "a sense of where they stand within the flows of capital," as well as an "existential value" of placing "struggles side by side to render struggles visible to each other and to themselves." In what follows, while I focus on a less material mapping than Bernes might have imagined, I do attempt a sort of counter-logistics: a reorientation of the position of the Amazon warehouse worker towards the reimagining of Amazon itself. To accomplish this, I draw on and combine the cogent global analyses of critical logistics scholarship, and local grounded ethnographic research of the warehouse I worked at. By centering my and other workers' daily experiences of work at Amazon, I strive to underline the importance of workers' lived knowledge in understanding and reimagining Amazon and systems of capital flow and societal sustenance more broadly.

I decided to focus my writing on Amazon in the summer of 2021, a year after working there. Upon making this decision, I completed the online interview process, and drove to the warehouse to complete my documentation and drug test. The day before my start date, I realized I had never been sent a confirmation email, and after an hour of chatting with an online Amazon hiring office employee found out that my drug test had been lost and I'd need to come in again. I rescheduled my appointment, retook the test, and waited for the results. By the time they came, the only remaining shifts were for after I would have to leave town for school, and I realized my plan of returning to the warehouse to conduct workplace ethnography would not be happening (as I've found out, these types of frustrating bureaucratic occurrences are not uncommon with new and long-time employees alike, and have been known to result in random accidental termination of employment). After a brief period of speculation about whether Amazon would really intentionally sabotage a Bard undergrad's senior thesis, I was forced to come up with an alternative plan. I began visiting the warehouse and talking to workers on break in the parking lot and waiting at the bus stop. This method had serious constraints; the conversations were always brief and one-off, and accordingly their depth was limited. Still, the visits and encounters were valuable, and while I do not exhaustively quote them, the broad attitudes and ways of thinking and speaking about the warehouse informed my own memories and conception of the lived experience of Amazon.

Accordingly, my major ethnographic source is my own experience of work at the warehouse during the summer of 2020. The story that forms the core of my analysis is thus "constituted by [my] positionality" and "filtered through [my] interpretive sensibility" (English 2021). The centrality of my personal experience is not done without reluctance, and this reliance

certainly limitse my analysis in several respects. Amazon warehouses are major sites of racialized and gendered exploitation, and my identity as a white, male-presenting young person no doubt shaped my experience and narrowed my vision and analysis of the warehouse. At the same time, a close focus and reflection on my months working in my particular department at the fulfillment center proved to be generative, and enabled me to more deeply understand and connect my and my coworkers' experiences at the warehouse to an understanding of global capitalism today and the relationship between capital and labor.

I begin in chapter 1 with a global view that seeks to understand the disorienting experience and material economic function of work at my local Amazon fulfillment center. Drawing on critical logistics scholarship, I offer a brief history of the logistics industry that Amazon is a part of, and the implications this economic reality has for latent and actualized worker power. I explore the concept of 'flow,' a mythicized corporate aesthetic of circulating alive and dead labor, and the global exploitation that shapes the production of much of the products that flow through Amazon's warehouses. As many before me have, I argue that while logistics acts to disempower workers through the despotic agility of circulating global capital, it also opens possibilities for new kinds of worker resistance and empowerment by utilizing key chokepoints and forging solidarity up and down the supply chain.

In chapter 2 I move to an analysis of the Fulfillment Center and its daily functioning, focusing particularly on one department: Inbound, Stow. I examine how the warehouse functions as a highly profitable coordinator of capital flow. Through the use and management of high-tech infrastructure, commodities, work, and workers, the warehouse performs this coordination of material and energetic capital through a constant logic of minutely subdivided temporality,

employing a network of automated systems to constantly track minute moment's of worker's time. I argue that Amazon's efforts to constantly increase commodity throughput via algorithmic management create a contradictory warehouse marked by calculative logic and material chaos, and a workforce that is alienated and disempowered but no less critical to the warehouse's function.

In chapter 3 I focus on the lived experience of working at and existing in the warehouse. As Amazon constantly seeks to make individuals into conduits for capital flow, I reveal how workers experience their position in the global-local warehouse, the work itself, and Amazon's techniques of management and control, while also performing their own acts of coordination and management which sometimes aid and sometimes resist Amazon's project. I argue that Amazon's project of streamlining maximum energetic and material temporal efficiency is not only necessarily incomplete, but also constantly contested by workers in both implicit and intentional ways.

By synthesizing global analyses of supply-chain capitalism to the shop-floor daily lived experiences and struggles of workers, I hope to build an understanding of the Amazon warehouse as a contradictory, global-local space of capital flow, labor, life, and struggle. My analysis strives to center the perspective of the Amazon worker, position it within a global economic context, and enable an orientation that reveals the contingencies and vulnerabilities of Amazon's project and how it may be reclaimed and reimagined towards a better future.

The Global Warehouse

My first day working at the Amazon fulfillment center near my house, I got lost. The day started with about 30 of us lined up under tents in the parking lot, shuffling forward to a "Learning Ambassador" who checked and scanned our paperwork and handed us ID cards and a stack of business card-sized papers with various bits of important information such as safety codes and Amazon's fourteen "Leadership Principles." As I flipped through my cards, I learned that the principles they valued so highly included "innovation and invention," as well as "a bias towards action." After reading another card informing me that we must always have our ID cards fully visible, I decided to utilize that bias towards action that must have gotten me hired, and use the lanyard I had just been given to hang my ID around my neck. As I followed the line of other new-hires through the dizzying warehouse, our Learning Ambassador inaudibly giving directions somewhere 20 people up the line, I inventively broke the plastic buckle on my lanyard, and innovatively stuffed the bundle of ID, info cards, and broken lanyard into my pocket to get promptly lost amidst a forest of unfilled punch and rewards cards.

As it turned out, these cards also contained information on where my department was located and which break rooms were closest, and so I spent my first 20-minute break wandering around the forest of robotic arms, boxes, bins, themed pet outfits, and tired, socially-distanced bodies, hoping nobody would ask why I seemed to be the only unlabeled item in the building. Eventually I found an exit, and sat in the quiet refuge of my dad's car for my remaining few short minutes before heading back in.

Working at Amazon was a thoroughly disorienting experience. More than just my own confused breakroom searches, working in a warehouse of the world's largest retailer means spending ten to twelve hour shifts in a massive (nearly a million square feet), noisy warehouse stationed somewhere along a seemingly endless flow of products, managed almost entirely through computers screens, algorithms, and surveillance. Massive turnover rates of both regular employees and managers mean that many Amazon employees barely know the people they work with, and COVID-19 social-distancing rules have meant gatherings and conversations deemed unnecessary to the work process are actively discouraged. The origin and destination of the objects themselves that workers spend their days (or nights) with are known only somewhere deep in an algorithmic cloud of RFID tracking technology, leaving workers alienated not only from the products they move, but from the role this work plays in the multinational machine that employs them.

The above account describes an increasingly common workplace in the US. The largest Amazon warehouses (Fulfillment Centers, or FC's) employ around 1,500 workers, and Amazon as a whole is currently the second largest employer in the country after Walmart, a recent press release showed that 1 out of every 169 American workers now works for Amazon (Amazon). As the company continues to grow at astonishing speed, dominating the logistics sector, its rapidly proliferating warehouses are quickly becoming central spaces for American (and global) working class life, both in the national imagination and the economy itself. As American deindustrialization has seen the vast majority of manufacturing hubs moved to places where labor is cheaper and worker organization even weaker, logistics giants like Amazon have become a central place to think about the future of worker organization.

Unlike previous major American employers like GM or US Steel, Amazon workers don't make anything, at least in the literal sense. Amazon manufactures virtually none of the products it sells, and over half are third-party products sold through Amazon's marketplace (from which the company takes 34% of the revenue as of December 2021). Instead of working in the heart of production, Amazon workers work in unseen coordination with millions of workers all over the globe in the circulation of commodities. In this way, the work an Amazon employee finds themselves doing (scanning phone chargers in a box, or stuffing RC cars into labeled shelves) and the unintelligibility of their role in the bigger machine beyond a bizarre fragmentary glimpse from within, is indicative of a critical shift in labor and the global economy that began over 50 years ago. This shift, often called the "logistics revolution," moved capital's primary focus from production to circulation and centered the logistics industry as the central site of speculative investment in the hyper-globalized and hyper-financialized neoliberal world economy (Chua 2018). In order to understand the position, precarity, and power of any worker (Amazon or otherwise) in modern global capitalism, one must understand the international economic reorganization that began in the 1960's, and the logic that choreographs the machinations of our system today. Utilizing the innovative work by scholars of critical logistics, this chapter will examine the so-called logistics revolution, the primacy of logistics and supply-chain capitalism in the modern world, and the consequences these have for the prospects of worker power.

At its most obvious, the logistics revolution and the development of logistics as a field of business science was a shift in the way firms thought about the shipping and transportation of goods. It sought to streamline and cheapen circulation in response to declining profits in production due in part to the diminishing of productivity-increasing advancements in

manufacturing technology (Chua 2014). As Deborah Cowen spells out in her seminal book *The Deadly Life of Logistics*, this shift was not simply a cost-saving exercise, but a profound reorientation of capitalist production and circulation that integrated the two categories. The science of business logistics is based on a calculation that takes in the whole of the distributive process (rather than calculating and managing them in a piecemeal way), aiming to coordinate and expedite the entirety of the supply-chain process from manufacturing to selling to delivery. As Cowen puts it, "Logistics was transformed from a least-cost analysis of discrete segments of distribution into a science of value added through circulatory systems." In the search for increased profits, corporations reorganized material networks of capital and trade according to new logics of circulation dependent on just-in-time models of flexible, demand-driven manufacturing, and precisely internationally coordinated transportation systems. "Business logistics helped build a global social factory" (Cowen 2014, 40).

The creation of such a factory is only possible in an economic system in which corporations have immense global power to transform local economies to meet rapidly evolving global manufacturing and circulation strategies, sustain the immense global inequities necessary for cheapened labor markets, and extract materials from increasingly tapped sources. Accordingly, a key part of critical logistics as a field of study is challenging the idea that logistics is in any way an apolitical project. Historically, logistics has been a military concept. Its presentation as a category of business science, while politically revealing, is more recent. Military historians have long viewed the efficient movement of resources and rapid reorganization of territorial economies as a key determinant in expeditionary wars (Bernes 2013). More specifically, much of the technology that is now central to supply-chain capitalism was

developed for war. It was the use of shipping containers by the US military in World War II and later the Vietnam war that demonstrated the utility of and fortified the infrastructure for the technology that quickly came to be regarded as the single most important technological innovation to come out of the logistics revolution (Cowen 2014, 41). Similarly, RFID technology, the system of radio-transmitted scannable barcodes which companies use to keep track of merchandise as it travels across oceans and continents, is critical to successful just-in-time supply-chains. The technology was again originally used by the US military, this time to help with logistical challenges in Iraq and Afghanistan (Bernes 2013).

As Cowen and others demonstrate, the links between the logistics industry and military conquest, particularly imperialism, run deeper than shared tactics and technologies. Indeed, the whole system of corporate supply-chain capitalism is necessarily dependent on a radically unequal world predicated by a history of imperial colonialism and sustained by systems of structural violence that deepen and legitimize this global hierarchy. Thanks to the systematic destruction of subsistence economies, corporate land grabs, structural adjustment programs by the IMF and World Bank, militarized borders, coerced and forced free-trade agreements, and military intervention when necessary, Global South economies are kept entirely dependent on Global North economies and multinational corporations (Hickel 2021). Today, wages in the Global South average at one-fifth of wages in the Global North.

Global inequality is fundamental to the logic of supply-chain capitalism. As Jasper Bernes argues, logistics technologies, unlike other capitalist technologies like the Fordist factory which increased total worker productivity, the technologies and techniques of the logistics industry are fundamentally about reducing labor costs. Machines and coordinated global systems

that get products from factory to market more cheaply and efficiently serve primarily to "offset the otherwise prohibitive cost of exploiting labour forces halfway around the world" (Bernes, 2013). In other words, "the use-value of logistics, for capital, is exploitation in its rawest form."

Today, logistics dominates the global economy. As firms seek constant financial growth in a finite world, and financialization increasingly widens the divergence between investor profits and actual material production, international logistics systems create an economy characterized by a constant flow across flexible networks of circulating capital. With the increasing efficiency of this network, the process of circulation melds into the process of production and firms rethink the spatial organization of their supply-chains in global terms. As much fixed material capital as possible is liquified and poured into the flow of electronically-transported financial profit. The risk that comes with investments in immovable assets like factories, production centers, and universalized logistics infrastructure is mitigated as much as possible through increasingly "flexible" and "resilient" supply-chains which find the cheapest sites of extraction for the material resource needed (whether it's oil or labor-power) and integrate that site into the global circulation as rapidly, cheaply, and efficiently as possible (Bernes, 2013). All of this leads to an economy in which "over 90% of world trade by value travels across the sea via the behemoth container ships and oil tankers of the shipping industry" (Chua, 2014).

Every moment of the mystically constant 'flow' of global capital is propelled only through the power of workers who sell their ability to propel it forward. At its heart, Bernes argues, the "flexibility" and "resilience" of these supply-chains are about enabling employers to reroute around any troubling pockets of solidarity which threaten to slow the revered flow and

hurt investor profits. A global factory means bosses can perform age-old tricks of pitting workers against each other on international scales, sorting workers into cores and peripheries and keeping employment as uncertain as possible. The scale and top-down logics of the factory means that workers are disoriented as to their exact place in the machine.

The ability of profit-driven institutions to fluidly circumvent and snuff-out expressions of worker autonomy—a circumvention which is in fact built into the fabric of globalized capitalism—is indeed deeply troubling for the prospects of building real and formidable power among workers in the US or abroad. However, as new challenges arise to worker organizing in the modern economy, new possibilities simultaneously emerge. Firstly, the sprawling globalization of the production-circulation process means that workers are, though in ways obscured and difficult to track, materially connected across the globe. Tracing the specific manifestations of this connectivity could be an important project for critical logistics scholars, and indeed is a task taken up by business logistics experts every day in order to coordinate and streamline supply chains.

The second new possibility is the growing importance of chokepoints in supply-chain capitalism. It is this development that will be a central focus of my analysis of my workplace at Amazon. While financialization has had huge impacts on centering monetary growth and immaterializing the forces that motivate economic movement, our world is material, and investors must sometimes take the clunky risk of investment in immobile infrastructure. In other words, circulating capital must at least temporarily touch down in solid form, where flows of capital slow long enough to be momentarily materialized, multiplied, packaged and passed along by the hands of workers. In chokepoints of the flow, workers become critical conduits for capital

in motion, circulating and magnifying it through their labor and the unpaid surplus value they create. At any point, workers can stop.

Chokepoints in circulation now hold immense importance to the continued high-speed functioning of the global economy. If organized deeply and strategically, workers at (and ideally adjacent to) these chokepoints could leverage this import in powerful ways. It is this reasoning that leads Bernes to argue that the central place of resistance for the modern proletariat is no longer in sites of production, or even centers of labor, but at chokepoints of the circulation of capital through blockades and disruptions. He cites the 2011 Occupy Oakland blockade as a key example, and other recent examples include the Block the Boat protests at various ports up and down the West Coast. These protests drew much attention and have often been successful at obstructing and exposing the violence intrinsic within the constant circulation of capital. However, critically, they often relied (often inexplicitly) on existing labor unions, specifically dock worker unions with contracts that empower them not to cross picket lines of any kind. They also often lasted short periods of time, and although carrying important symbolic weight, did not tend to leave significant changes in worker's structural power or weaken capital's authority (citation needed)

Bernes is correct in identifying the interruption of the intricate choreography of rapid global circulation as central to resisting modern global capitalism. But there is a vital difference between primarily performative blockades that fundamentally rely on preexisting, pain-stakingly built, and dwindling pockets of resistance like dock worker labor unions, and coordinated, strategic disruptions that leverage and advance workers' power and solidarity, hurt corporate profits and materially threaten the coercive despotism of capital. This is not to say that pure

blockades aren't a valid strategy among the many that strive to interrupt the dizzying capillary flows of capital, or to discount the real and major organizing work (and successive violence from law enforcement) that is required to pull off these actions. These actions can and have resulted in substantive symbolic and material victories against neocolonialism, apartheid, climate devastation, and worker exploitation. But it is precisely these coordinated, strategic disruptions that can only occur through deep organizing of workers in the places the flow of capital must be valorized then passed on by workers.

The task, then, is to build solidarity and organize workers in a sustainable, strategic way that centers the needs of local communities without forgetting the international connectivity of workers in supply-chain capitalism. The workers who sustain the flows of capital are people with particular needs, wishes, and grievances, and these are at odds with the system they must sell their time and energy to. Worker organizing that strategically accounts for the simultaneous diversity and scale of global capitalism (Anna Tsing: citation needed), and combines an understanding of logistics systems with the ground-level experiences of workers themselves, has the potential to radically challenge the system's smooth continuation. It is for this reason that this project attempts to tie together the bird's-eye-view theoretical analysis of supply-chain capitalism by critical logistics scholars with the grassroots experiences of workers at one particular potential chokepoint, an Amazon warehouse in Kent, Washington.

When considering the overwhelming agility and non-localized despotism of the profit-driven institutions that control the international supply chain to circumvent (or surround) worker resistance, it is easy to despair at the state of even potential worker power and resistance in the modern economy. However, it is as plain as it is true that every circumvention, every

offensive maneuver against worker resistance, every rerouting, is ordered by capital but carried out by workers and workers alone. It is workers whose hands must move the material manifestations of capital flows in ways that attempt to circumvent resistance, and it is these very workers whose material interests are universally and fundamentally at odds with their employers. Expressions of power and solidarity for the collective empowerment of workers across the supply chain can be built. This can only happen, however, through deep organization of workers, that centers the unique local issues of heterogeneous international exploitation, while aiming to build-out solidarity across the logistical machine.

The Logical Chaos of Algorithmic Management

I drove to the warehouse for my first day at 5pm. I turned into the massive parking lot and slowly proceeded along in a line of cars looking for parking spots somewhat near the building entrance. I found a spot, tried and failed to find something unique about it to remember where it was, and headed toward the tents with signs saying NEW HIRES and a long line of people spread out in a weaving line underneath them. A man in a neon vest labeled "Learning Ambassador" handed us our badges and info cards. We were led in a line through theft and Covid security and into the loud busy warehouse. I realized that somewhere at the front of the line our Learning Ambassador was giving something like a tour and describing the different areas of the warehouse, but me and the rest of the back half of the line that was too far away for his voice to cut through the sounds of the warehouse and we didn't catch a word of this narration. We were led up several flights of stairs where we eventually reached a quieter conference room. The 40 or so of us all filed in, sat down in outspread desks, and watched an older man with an LA vest click through a powerpoint on hazardous materials. He told us the various types of materials that weren't supposed to be in the warehouse, and the varying actions we should take upon noticing the various categories (set the product aside, find and select the HAZMAT on your screen). I immediately forgot which materials I was supposed to look out for–the information was never refreshed after the first-day presentation–except for two: a certain type of battery, and any liquid leaking out of a container.

The presentation ended, and we were told to separate ourselves into small groups depending on our assigned department. Several Learning Ambassadors stood at different corners of the room waiting to show us to our work stations.

As I came to learn, the work of the warehouse is organized into two departments: inbound and outbound. Inbound begins at the receiving docks, where workers rapidly unload boxes from trucks onto carousels, and off the carousels onto hastily stacked pallets to be taped and sent by elevator to the upper floors. Once upstairs, the pallets are unwrapped and the boxes are dispersed by hand to hundreds of stowing stations, where they are opened and each individual item is scanned and stowed into tall fabric cubbies called pods. Unlike at older facilities where workers walk tens of miles every day through shelves of inventory to stow incoming items (and later pick outgoing ones), newer Fulfillment Centers are equipped with robots that bring the shelves to the workers. These robots, which resemble giant beefed-up Roomba's, were created by Kiva, a startup robotics company which was purchased by Amazon in 2012. In 2014 Kiva was renamed Amazon Robotics, and, despite previous promises, subsequently stopped supplying its warehouse technology to other vendors. In 2016 the Fulfillment Center I would eventually work at was built specifically for the centralization of the shelf-carrying orange robots in the work process. Thousands of the robots patrol the warehouse's interior, rapidly moving towering pods of products in a dizzying dance oriented by QR codes on the floor and choreographed by software that anticipates ordered items based on consumer behavior patterns. This robot-ruled interior (called the field) makes up the slight majority of the warehouse's floor space and is marked off-limits for all workers except those specifically trained and wearing vests with radio sensors that alert the robots to their presence and cause them to

temporarily slow and avoidantly steer (but not fully stop) their movement. The field is surrounded by stowing stations, before which robots line up while workers stand in place filling their pods with inbound items from the trucks floors below. It is here, as products are passed from human hand to machine, that the inbound/outbound line is drawn. Once their pods are full of items, the robots carry those products into the depths of the field–unreachable to vestless workers–where the items are stored in a maze of aligned pods,and are quietly shuffled around while anxiously awaiting purchase in the vast dim center of the warehouse floor.

Until, through miles of underground and underwater internet cables, the fuse is relit: someone somewhere clicks “Buy Now” and the nearest robot carrying that item springs into motion. If similar items have recently been flagged trending by software that analyzes customer behavior data, the robot will have likely already begun creeping back towards the exterior of the field in quiet anticipation. In any case, from wherever they are, the robots quickly zip their cargo back from the interior, out into the noisy area of fluorescent light and into human hands. The robots are met by workers at picking stations, which are interspersed with the stowing stations surrounding each floor’s field. Here, workers stand waiting in front of a screen that tells them which product to pick and which cubby it was stowed in. Pickers toss each item into bright yellow stackable bins, which are pushed onto a network of automatic conveyor belts sending the bins over the heads of the hundreds of workers unloading, distributing, stowing, and picking, to packing stations where workers pack items into boxes and tape them up to be stacked on pallets, sent back to the docks, loaded into trucks and sent to Distribution Centers and eventually to customers’ homes.

Amazon Fulfillment Centers are used by Amazon as highly profitable engines and conduits of capital flow. As Nantina Vgontzas shows, although operating in the "notoriously unprofitable retail sector," Amazon has consistently managed to reduce costs and raise its operating margins every year, with an explosion of profitability during the early pandemic recession when I began working there (Vgontzas 2021). It managed this in part by following and virtualizing a Walmart-style formula of investing heavily in logistics, dominating its supply chain and forcing down labor and supplier costs, thereby capturing more and more of the market share and enabling its power to further increase profitability through quickening inventory turnover and increasing sales. This quickening of inventory turnover has become central to Amazon's pitch to consumers, offering two or one or same-day shipping that helped pull millions of customers from shopping in stores to ordering items from their homes. As Amazon sales and customers (Prime subscribers) grow, Amazon continues to invest more in expanding its logistics infrastructure (building warehouses at an astonishing pace), to push tech workers to innovate algorithmic means of maximizing sales and efficiency up and down the supply-chain, and to push workers to maximize their warehouse's throughput as living conduits of flow working as extensions of high-tech infrastructure. As the biggest retailer in the world continues to expand into and dominate new markets, Amazon is fed largely by this cycle of increased profitability in its logistics sector that Vgontzas describes: quickening inventory turnover, thereby reducing costs, thereby increasing profits, thereby increasing investment in new methods (namely technological innovation and/as new techniques of worker management) of further quickening inventory turnover. For retail broadly and Amazon especially, quickening inventory turnover is the "core imperative." (Vgontzas 2021, 10). The reduction of logistics time is the fundamental

process which drives Amazon's logistics machine. Consequently, warehouses are obsessively temporal spaces. Every inch of the warehouse, every machine, infrastructure, and worker, exists in that space to enable and increase commodity throughput and to enable maximum flow; managers and programmers constantly seek to find and scrub out any pools of extra or stagnant time not spent enabling efficient commodity flow.

Sitting in the big conference room, I looked down at one of the cards I had been handed to find out where along the river of Amazon merchandise I would be positioned. "Inbound: Stow." I walked to the group of workers with the same assignment, where two Learning Ambassadors split us up once more into two smaller groups of about seven and led us down the stairs to the stowing stations. We followed our Learning Ambassador along the floor down workstation after workstation, each about 12 feet apart with one worker per station. The warehouse was loud; whirring of conveyor belts, a chorus of beeps from workstations, and crashes of bins and pallets and pallet jacks all culminated in a constant roar of inhuman noise. But apart from their chirping scanners the workers were mostly silent as they stood at their stations, each scanning and stowing in their own rhythm. As we walked, the stations and the people in them began to blur together.

Eventually we arrived at a section of floor with several empty stations in a row. As our Learning Ambassador began logging into one of the screens, I stood behind him with the rest of my group and looked at one of the workstations at which I would soon be spending many of my waking hours.

Each station has a roughly five foot by five foot black ergonomic mat on which stowers stand for nearly their entire shift. The stations are placed along the chain link fence that separates

the exterior of the floor from the interior. In the exterior, workers move around pallets and boxes to stow items into, and pick items out of, the robot-populated interior (the field) where the unboxed items are stored in their pods and shuffled around by the robots. At each station along the field side of the mat is a mat-length gap in the fence where robots with unfilled pods pull up, allowing stowers to reach into pod's cubbies and stow items in them. The bottom of the gap has the only separation between field and station: a one-foot tall (robot height) metal barrier that tells the robot's cameras where to stop (and always seemed to me like a perfectly positioned obstacle for a worker to trip over into the path of an oncoming robot). Stepping over the barriers, or even reaching to pick up an item from the floor, I was told, would result in immediate termination of employment out of Amazon's concern for my safety. The pods themselves are about seven and a half feet tall, from the bottom shelf one foot off the ground to the top shelf. To find space for their variously sized items, stowers must frequently bend down to the floor or use the metal steps that slide along the metal barrier to reach the top shelf.

On the right or left side of the mat, perpendicular to the field opening, is the station's sled: a waist-high metal carousel that holds the boxes and bins (called totes) of items that workers stow. The sled has two sides. The far side of the sled works like a conveyor belt at airport security, and is made of rolling metal pins which allow the workers (called water spiders) who supply stowers with items to roll boxes down the sled and fill it with containers of products (called WIP: Work In Process). The part of the sled on the stower's side has six slots for containers of items. Above the sled is a metal shelf, which holds a handheld scanner, a box cutter, tape (for mistakenly opened boxes), and worker's bags (which almost always contain tupperwares of food, water bottles, and usually some type of energy drink and painkiller).

Somewhere behind the stowers is a tall cardboard container (called a Gaylord) to hold the heaps of emptied boxes stowers generate, and a space for workers to stack empty totes. Mounted in the corner between the carousel and the gap, just above head level, is a small computer monitor. Above and behind every station is a camera.

The labor of stowing, my group and I soon learned, is repetitive and mind-numbing. Stowers stand in the corner between the sled and the field, removing items from their containers on the sled, scanning them, and stowing them in robots' pods. Stowers pull containers into their slots from the far side of the sled where the water spiders load them, and scan them to log them in. Sometimes if boxes are particularly large and don't fit in the slots, stowers must leave their stations, walk around to the other side of the sled, and carry them back to their side of the sled. Stowers mostly place items randomly, wherever they can find space in a pod, but there are a few rules. Similar items are not to be stored in the same or adjacent cubbies, and heavy items are not to be stowed above the bottom one or two shelves. When an item is scanned, colored lights illuminate the cubbies in which it should not be stowed in a ghostly magenta. (Sometimes, in a particularly brightly lit station or on a particularly long day, I would stand and stare at a pod and wonder if it was really being lit up or if I was imagining the light). While older stations require stowers to use a handheld scanner to scan each item as well as the cubby they place the item in, newer stations use cameras to automatically track where the item is placed, and only require the stower to briefly hold the item's barcode underneath an automatic scanner before stowing it. When a given pod is full, or none of the items on a stower's sled will fit into the size cubbies of the available pod, the stower hits a button and the robot in front of him is sent away with the newly stowed items while another one (usually waiting ready behind the first) zips forward.

The whole time stowers work, they watch their screen. One part of the screen is needed for proper stowing: it displays the image and name of the item last scanned, or an error message telling the stower the item isn't recognized and needs to be rescanned or set aside. The bottom bar of the screen has buttons stowers use to log in new containers or log out emptied ones. It also allows stowers to pull an andon (call for assistance) if there's a spill, if an item falls onto the field, or if they run out of work. The other half of the screen tracks the stower's speed. In large white text it displays the number of seconds since the last item was scanned, constantly increasing and resetting. In smaller text at the top of the screen are the average number of seconds in between scans, and the total time spent at that workstation.

The actual training for stowers took well under an hour. Me and my group were briefly shown our assigned task. The eight or so of us all crowded around our Learning Ambassador as he demonstrated, struggling to get close enough to see and hear him without getting within six feet of one another. This of course, like many tasks in the warehouse, was impossible, and after less than five minutes of demonstration I was assigned my own workstation without having hardly any understanding of the details of the work. After standing in front of a blank screen for a few confused moments, my Learning Ambassador came by and helped me log into the workstation. I was surprised and relieved to find that my screen guided me through the entire work process, reviewing how to stow in an animated training video that appeared whenever the system sensed my frequent mistakes, and beeping sternly when I did a step out of order or forgot to scan something. Unsure whether I was doing it correctly I fumbled through the work, only aware that it was supposed to be performed as quickly as possible. When my Learning Ambassador came by the second time to check on me 30 minutes later, he looked at my screen

and seemed happy to see an average scan time of 11 on my screen. You got your takt time under 12 seconds!" he said cheerfully. I didn't know what this meant, but he immediately pulled out his iPad and began asking me a series of yes or no questions about whether I understood each component of the stowing process. He checked boxes down the list as I nodded through the questions, feeling a mixture of pride at having learned so quickly and confusion as to what exactly I'd learned. As he started to leave, I asked him what I should do now, and he seemed confused by the question. "Keep stowing." My training was finished. Later on, I realized the only reason I had achieved a sufficiently low rate during that first hour of work was because I happened to have been given a box of pens, and was incorrectly stuffing handfuls of them in a single cubby at a time.

After my Learning Ambassador left, I stood on my rubber mat, struggling to open boxes with the cheap yellow box cutter at my station, anxiously watching the big number on my screen steadily grow higher and higher above the 11 I had just been praised for. As the sensors monitoring my scanned items noticed me hurriedly cramming items into the wrong cubbies, they continued to stop my work and replay a training video. "Looks like you've been scanning some items incorrectly…" it said, as it guided me through the process again with the same slow animated visuals. Scan the item, check the screen, stow the item, scan next item. I corrected my technique, careful not to stow multiples of the same item in the same cubby (or adjacent cubbies), and hoped the lessening frequency of the animated instructions was a good sign (despite the average time between on scans now well above 20 seconds). As I worked I realized I had no idea when my next break would be, and only stopped scanning when the workers around me left their stations and one happened to tell me "Hey, take your 20."

The Fulfillment Center uses three primary metrics to track and control workers' time. Perhaps the most notorious of these is rate, the word used to refer to the speed at which workers process products through their station along the flow. Under a corporate calculative logic in which speed of circulation, not quantity (or quality) of production, is the principal metric towards which managers and executives aspire, the specter of rate is methodically inserted into every quantifiable step of the work process. Rate, in its various role-specific and numerical manifestations, is discussed frequently among nearly all workers. Many of my early conversations with other new-hires revolved around rate: what it really was, what Amazon was actually keeping track of, how to keep up with or, alternatively, circumvent expected speeds of work, what would happen if you didn't. Particularly among new hires, rate is often used as a blanket term for a few different metrics for the speed at which products pass through your workstation. In stow, rate literally means the number of items stowed per hour. Expected rates for stow seem to range from 300 to 400 items stowed per hour. This abstract goal is made trackable–indeed unforgettable–to workers on a minute scale through a smaller metric: takt time.

Takt time is the number that displays conspicuously on the screen throughout the stowing process, continually counting up from the last scanned and stowed item to the next one. Maintaining an average takt time of 12 seconds means achieving an average rate of about 300 items per hour (something I accomplished for those few glorious minutes during my training). While most workers are far removed from having any consequential relationship to the broader process of commodity movement produced through their labor, takt time offers one singular value measuring each stower's exact contribution to the flow of products through the warehouse. By tracking their rate in items-per-hour for managers but decoding this value on each stower's

screen in seconds-per-item, takt time's silent counting exhibits constant numerical feedback for workers. Three hours spent at a workstation are summarized in an angry two or happy one digit number. This number produces an immediately legible summary of the value added by a stower's labor, and loudly displays an assessment clearly visible for the convenient surveillance of workers by managers or sometimes other coworkers. Mostly, though, the number itself does the managing.

As the rest of my first week at Amazon went by, I was constantly unsure if I was in the right place doing the right thing. Moreover, nobody seemed to care or to be keeping track. Many new workers at Amazon that I talked to expressed feeling under-trained and generally disoriented, a consequence of a particular strategy of worker management that Amazon employs. For several days I reported to the wrong manager at the beginning of each shift, assuming that I was to always report back to the same floor I had first been trained to stow on. It wasn't until another stower finally showed me where the white board was that had our assigned floor, manager, and break schedule on it, that I finally learned how my day was supposed to begin. After finding your shift group's floor assignment (I was about 65% sure my shift group was NA7, a guess I operated under successfully for the entire summer), I would walk up the stairwell to the right floor where, if you were punctual, a manager would be waiting. The manager then would hand me, and the other stowers gathered there, each a piece of paper with the number of a workstation written on it at which they usually spend the rest of their shift. In various instances, my assigned workstation wouldn't let me log in, or there would be someone there, or I would have some other problem that caused me to have to wander the floor looking for my (or any) manager to direct me to another assignment. Throughout my time at Amazon, the break schedule

remained confusing, often changing depending on the day, sometimes depending on what part of the warehouse I was working in, which manager I was under, or which hiring group I was in. It took me several days to learn the locations of the break rooms, and I spent most of my early breaks in my car in the parking lot, not wanting to spend any more of my break than necessary wandering the cement warehouse floor. I was confused by the work itself too; I didn't know how fast I really had to stow, how important each metric on my screen was, how much it mattered whether I followed the proper stowing technique exactly, or where to get a boxcutter if my station didn't have one. While even before I began working there I knew the critical role metrics of productivity played in the warehouse, I was surprised by how deeply solitary the experience of stowing was as I stood there on my 5x5 black mat (or as I wandered the floor trying to find my way around).

I felt at once watched and alone, surveilled and undirected. Encounters with managers were infrequent, impersonal, and brief, to the point where one could find a certain freedom in the anonymity. At the same time, all along the floor stowers around me appeared to be working quickly and efficiently, the timer and metrics on my screen silently counted the length of each moment between my scans, and a camera sleeplessly gazed at me from its perch above my workstation. Sometimes it seemed unfathomable that anyone was really paying attention to the most minute details of my temporal behavior throughout my 11 hour shifts. Other times I would look at my screen and see a troublingly high scan-to-scan average, and a surge of stress would prompt me to focus on my work.

Like the local worker staring up into the incomprehensible machinations of the "global factory," it is difficult to make sense of the chaotic day-to-day in an Amazon warehouse, let

alone find and feel comfortable with one's place in it. This experience of disorientation is explainable at least in part by particular philosophies and strategies of workforce and warehouse management employed by Amazon (putting aside the other not uncompelling explanation that is my own general ineptitude). First, Amazon has long strived to maintain an hourly warehouse workforce that is flexible and fungible. As the New York Times revealed in its piece on a Staten Island Fulfillment Center, since early in Amazon's history Jeff Bezos saw an "entrenched" workforce as a threat to Amazon's strategy to dominate logistics and ecommerce through high-speed fulfillment of orders (NYT 2021). A former H.R. Vice President described Bezos' philosophy as revolving around an assumption of inherent laziness, allegedly proven true by data that showed hourly workers' metrics declining over employment time. "What he would say is that our nature as humans is to expend as little energy as possible to get what we want or need." Both contributing to and a consequence of this philosophy is the reality that hourly workers have almost no possibilities for significant upward mobility. Managers are virtually always college graduates, often hired right after graduation, separating them decisively from the rest of the warehouse workforce. While workers do receive slight incremental raises over their tenure, these stop after a few years. In his 2014 letter to shareholders, Bezos touted a policy of offering between two and five thousand dollar bonuses to employees who quit and promised to never return to another Amazon facility. He writes that "the headline on the offer is 'Please Don't Take This Offer." "We hope they don't take the offer; we want them to stay." Bezos claims that the point of this policy–which was discontinued in early 2022 as Amazon began struggling to continuously fill its workstations with new workers–is to "encourage" workers to "take a moment and think about what they really want. In the long-run, an employee staying somewhere

they don't want to be isn't healthy for the employee or the company" (Bezos 2014). Luckily for everyone's health, the turnover at Amazon warehouses is extremely high, around 150%, meaning that workers churn in and out of the warehouse at a pace not unlike the merchandise they transport.

Amazon strives towards extracting maximum productivity from its workers. Because robotics warehouses hold a limited number of workstations, the number of workers that can be put to work in the warehouse at a given time is limited (Small, 2010). This means that in order to increase throughput in order to meet sometimes unpredictable surges in demand, Amazon is uniquely constrained in its ability to simply increase staffing, and instead constantly seeks ways of increasing average individual productivity. At the same time, Amazon views a workforce of tenured, skilled, individually valuable employees as a threat to the flexibility and speed of its operations. Instead of creating long-lasting employer-employee relationships and encouraging workers to become increasingly skilled and comfortable in their work environment, Amazon's training and work-process tech is designed to fluidly facilitate constant turnover, undergirding a philosophy in which a new worker hurriedly trying to meet rate is seen as more valuable than long-term employees who might more deeply understand the intricacies of the warehouse's function but whose speed may stagnate. Every piece of the warehouse–every plastic bin, every bit of coded software, every conveyor belt, every robot–is designed to maximize the efficient flow of goods from inbound shipments to outbound deliveries. However despite their aspirations, Amazon is likely years away from a fully automated warehouse; the task I found myself doing no more than an hour into first stepping inside the warehouse–standing on a mat picking up items and placing them in appropriately-sized cubbies–is extremely difficult to automate given the

varying sizes, shapes, and weights of the items. Instead, an algorithmic logic striving towards maximum net throughput guides the warehouse as the people that fill the workstations are calculatively reduced to the rate of productivity in their non-automatable roles.

The opacity of the warehouse from the worker's perspective is a mark of this computerized management mind of the warehouse itself. The warehouse feels unknowable in part because, to the humans inside, it is. Areas of knowledge and management previously performed by humans are continually automated, with Amazon preferring to rely on occasionally imperfect but always improving and accelerating machine-learning than less predictably improvable human labor at every level of coordination possible. Because of this, the warehouse can appear, in various instances, both strikingly efficient and chaotic. My implicit understanding of Amazon warehouses as spaces of frictionless commodity movement–one part a curated imaginary developed through consumption of advertisements, training videos, and popular rhetoric, and another part accurate conception of the material aspirations of the company–was constantly conflicted by daily experiences of unorganized and unpredictable chaos. In many moments, I would watch human management struggle against these chaotic inefficiencies. Expressions of unproductive worker autonomy, Covid cases rippling through departments, old breaking equipment that hadn't been replaced, an unequal workstation-to-worker ratio, not enough inbound WIP to fill stowers' sleds, departments running out of pallets or other supplies, or glitches in robotic or computerized software causing lost items or interruptions to workflow all typify the kinds of regular occurrences that would cause managers to pace around the floor and type on their iPads with extra intensity. As one worker said to me, in moments of chaos or stoppage, "managers are always looking for ways to smooth their metrics." Sometimes, such as

in the case of Covid or worker resistance (both organized and sporadic), these unexpected complications would threaten both human and algorithmic management's control, and chaos and efficiency would clash. However at other times, chaos and efficiency seemed to work in harmony as products of algorithmic planning, revealing managers as similarly alienated as hourly workers from an understanding–let alone control over–the warehouse and the logic of the flow as a whole.

Somewhat famously, Amazon has long adopted a randomized stowing process. Rather than organizing items into any discernible categories, they are stowed completely at random, a process that aids and is aided by the speed of work. As soon as they enter the warehouse, boxes are scrambled and stacked into random pallets as workers hurry to unload them from the moving conveyor belts. They are then sent up to stowing floors where water spiders further scramble them, taking pallets of items across the warehouse to the various sections of workstations that they are responsible for and distributing them across many stowers. Stowers then stow the items as fast as possible, wherever they can find room in the pod a robot shows them. In each instance, the randomness enables workers to speed through these processes without attention or deliberation to the destination of the items. Further, workers' efforts to speed through the work–incentivized in various ways–further aid the randomization of items. Workers at the docks try to make their pallets from boxes of various sizes, puzzling them together to create a pallet that is stable and takes advantage of its full carrying capacity. If they have a pallet of one kind of item, water spiders are taught to distribute these items gradually across all of their workstations rather than giving one stower several of the same item which can slow the rate of that stower. In order to achieve fast takt times, faster stowers tend to randomize the size and shape of their

products as much as possible, so as to raise the chances of being able to fit as many items as possible in the cubby-size of each pod they are shown.

There is also a certain amount of chaos that is deemed necessary for the growth of algorithmic management itself. Shortly before I began work at my warehouse, Amazon introduced a program called AutoFlow which strived to automate the previously human managerial task of deciding where and how many workers to position at particular workstations to most effectively keep up with the flow of in and outbound products (Day 2021). During the beginning of the program's implementation, it frequently made errors (such as regularly suggesting that managers position half of a worker at one station and the other half at another). Human managers were instructed to follow the program's lead and let it make mistakes in order to allow it to learn and improve, which it slowly but surely did. Instead of coordinating a harmonic system of human labor and machines to facilitate flow, managers' duties shifted to synthesizing the simultaneous chaos and efficiency created by newly empowered algorithms. By stepping aside to allow AutoFlow to learn from its mistakes, managers further fortified the creation of a warehouse that is numerically logical, efficient, and increasingly profitable, but increasingly incomprehensible from the inside.

Often, it is difficult to tell the difference between the moments of chaos that enable efficiency and the moments that conflict with it. In the case of machine learning and programs replacing human decision, chaos aids movements towards increased overall efficiency even if it does not feel like it to the humans inside. Other times, moments of chaos are the necessary but accepted result of efforts to increase efficiency in broader ways, such as poorly-trained stowers spending entire shifts performing their work incorrectly. Finally, moments of chaos sometimes

do reveal exceptions to the idealized vision of a fluid and precisely planned movement of products from department to department to outbound trucks. Still, the opacity of the warehouse's logic and invisibility of the algorithmic conductor make the fantasy of unimpeded efficiency feel impossible to contest from a worker's perspective.

Day to day operations in the warehouse–the movement of the robots, the tracking of items, the anticipation of orders, the hiring, stationing, tracking, and firing of workers–are largely (and increasingly) algorithmically-conducted. As more and more of the coordinative work of the warehouse is automated, the warehouse technology resembles a reverse of the basic conception of the early industrial factory; instead of machines replacing the most laborious energy-requiring aspects of the work while human workers focus on more intricate or coordinative functions, the human role is reduced to the repetitive movement of products from one machine to the next while much coordinative labor is automated.

In its efforts to create a system optimized for the swift movement of products to consistently meet unpredictable and immediate online demand, Amazon uses computer programs and data-fed algorithms to manage the constant human and machinic labor of circulation in the warehouse. Crucially, unlike the machines and algorithms that direct and work alongside them, people must be compelled to work. As management of the warehouse is increasingly automated and algorithmically dictated, workers are disempowered and alienated from the logic of the broader process they are a part of. The work environment is characterized by simultaneous obsessive temporal and material efficiency and frequent chaos and crisis as a *feature of* this calculated aggregate efficiency. It is in this context that Amazon must employ various ways of compelling workers not only to work as fast as possible, but also to work within an

incomprehensible and chaotic environment as tools of the computer systems directing and monitoring them.

The warehouse infrastructure constitutes a path of commodity flow through alternating zones of automated and human labor, with individually delineated squares called workstations where human hands perform the key connective moments of commodity circulation. Five-by-five foot squares of ergonomic mats partially surrounded by containers of commodities and machines delivering and taking away those commodities, workstations exemplify the ideal integration of human workers in the datafied warehouse machine. Boxed into their prepositioned squares, easily and exhaustively surveilled and tracked, deskilled and minutely focused, workers need not have an understanding of the broader warehouse or commodity flow, nor need they care. (They only need to be able to find their way to their workstation by the beginning of their shift or end of the last break, a task of orientation left under the workers' responsibility only because it occurs in their time, not the warehouse's.) Amazon's task then is simply to find ways to compel workers to perform their singular task as quickly as possible for long hours.

Because the number of workstations is limited in the carefully designed commodity pathway, Amazon constantly attempts to innovate new and cheap ways of increasing worker productivity at these stations in order to maximize their productivity and increase overall warehouse throughput. Multilayered systems of surveillance continuously track and quantify every minute moment of each employee's work at the workstation, sending this stream of data to worker's screens, human in-house management, and to feed future systems of machine learning and algorithmic management. All these metrics and techniques–workstations, rate, takt time, TOT (time off task)–mark Amazon's efforts to integrate human and machinic–or living and

dead–labor. As Delfanti writes, “the incorporation of worker knowledge in software systems does not eliminate the need for the control of living labor. Actually, the latter need grows with the increased technological nature of the labor process. As put by Panzieri,written in 1967 here cited by Delfanti, capital has ‘an absolute necessity to obtain an absolute integration of variable capital in fixed capital’ (Delfanti 2021, 51), that is, of humans in machines. At Amazon, such integration is fostered through the interplay between machinic dispossession and augmented despotism, which subordinate workers to both algorithmic systems and organizational techniques.”

While increasing automation marks efforts by Amazon to “diminish its dependence on labor,” the use of new technologies of worker surveillance and control–while automating portions of previously human managerial labor–at the same time inevitably reaffirm Amazon’s (and capital’s) fundamental reliance on human labor (Delfanti 2021, 40). Terms like “inbound and outbound” and “flow” along with descriptions of the innovative technological marvels of Amazon warehouses can imply a warehouse in which workers are stationed alongside an efficient flow that is somehow separate from them, a flow that they can sustain but didn’t create (and consequently can’t stop). But of course in truth, the flow and any value it creates is human labor all the way down. Every single commodity’s profitable journey through the chaotic machine of an algorithmically-conducted warehouse of robots is guided and fueled by the hands of hundreds of workers (not to mention of course the accumulated labor manifest in the machines, computer programs, and commodities themselves). Every critical (read: transitional) step of a commodity’s journey through the warehouse is performed by human workers. The hundreds of split-second moments of often subconscious judgment involved in just

stowing–picking up items of various sizes and shapes, quickly finding space in cubbies for each item, finding poorly-placed barcodes and scanning them correctly, organizing sleds with boxes of items in an efficient way–are in reality deeply complex and difficult (in the near term impossible) to automate (Gutelius 2019). Further, programs and machine-learning need massive amounts of data to function, and as Delfanti shows, a major function of the warehouse is extraction of this data from human workers, coordinated globally across warehouses and workforces. Every time I stowed an item, I added to an unfathomably vast wealth of data constantly created and collected in warehouses, processed by various programs and incorporated by those programs back into the warehouse's function and coordination. (The project of data collection happens outside the warehouse walls too, as data is collected in the personal devices of Amazon customers and put to use across the warehouse network.)

Finally, even as Amazon strives to place the coordinative parts of warehouse work under the control of computer programs while stationary workers fill for now non-automatable tasks safely contained in carefully positioned workstations, hundreds of workers at every kind of Amazon warehouse work beyond workstations and their connected tools of surveillance and control. These workers spend their shifts performing complex and intricate coordinative work on which the warehouse's success is entirely dependent. Problem Solvers walk many miles throughout the warehouse finding missing items or relabeling un- or mislabeled items, working within the details of a complex computerized system of barcodes and item tracking that frequently goes awry. These workers act to moderate between the material chaos of the warehouse and the abstract logic of the programs that track items through it. Amnesty workers also act to smooth conflicts between algorithmic logic and the material chaos it produces and is

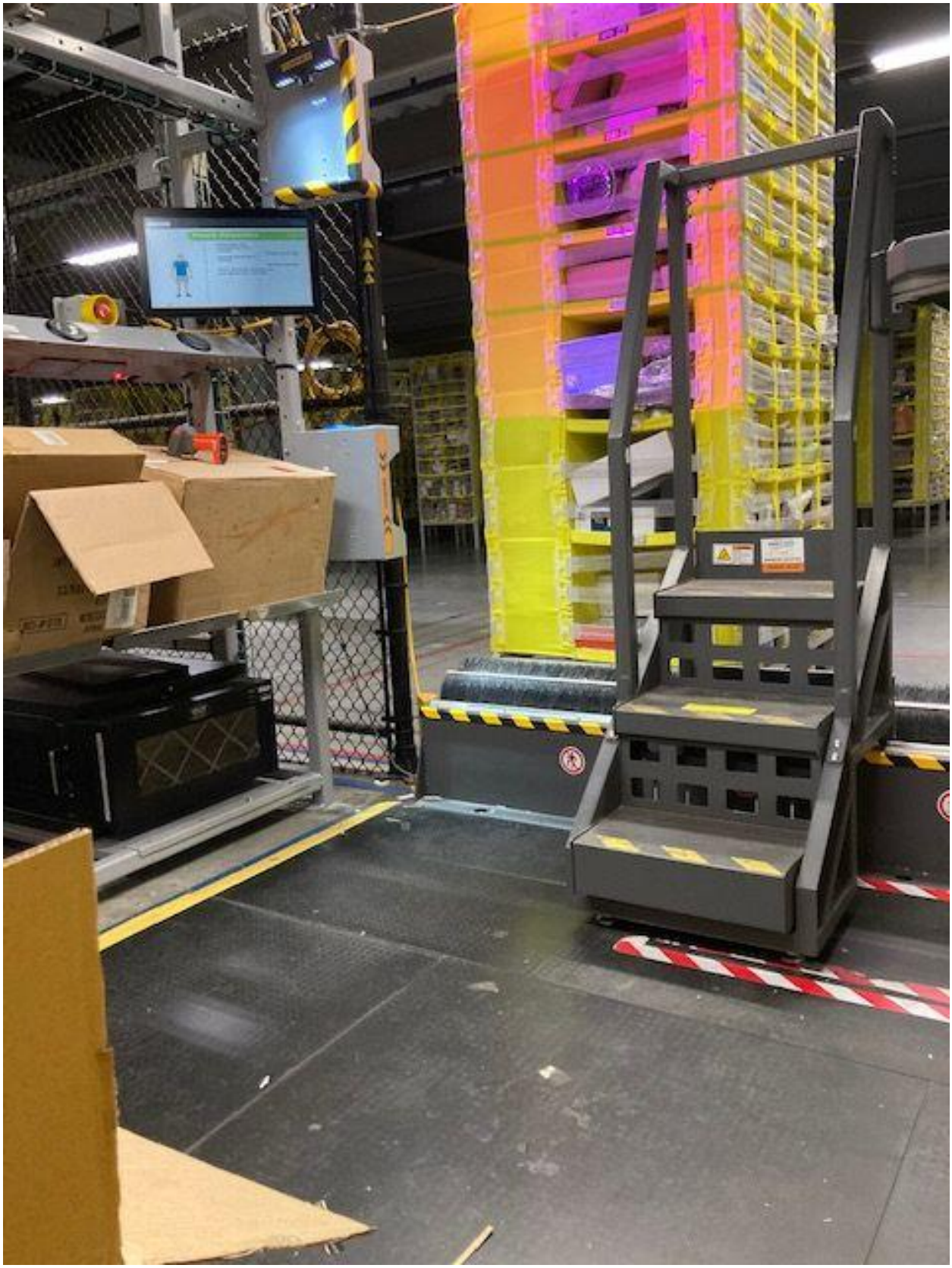
challenged by. These are the workers who, outfitted with special vests that alert robots to their proximity, work within the robot-populated field, ensuring that the floor is clear and clean, picking up fallen products, and occasionally performing basic maintenance or diagnostics on malfunctioning robots. Lastly, water spiders work within many departments, ensuring that their workstations are fully stocked with products and the supplies needed to facilitate their movement, and largely controlling and coordinating the flow of products through large sections of the floor.

From minute moments of complex decision-making and flexible judgment, to the need for massive amounts of relevant data, to the fundamental reliance on human workers to perform constant crucial coordinate work within and between the warehouse departments, even the most complex technologies of automation remain helplessly reliant on human labor in multiple ways. This is the heart of Amazon's key contradiction, exemplified in everything from my first week disorientation, to the logical chaos of algorithmic management, to the stressful monotony of work, to the warehouse's dependence on water spiders. Even as high-tech automation purports to offer a way for Amazon to escape its reliance on workers, the very machines that encroach on the tasks of human workers need those workers to be integrated alongside them for the whole warehouse to function. The chaos produced by algorithmic management, for instance, requires workers to manage and create commodity flow through that chaos. The work of stowers, for instance, cannot be automated in part because of algorithmic management's logical and efficient technique of randomized stowing which requires workers to make dozens of quick decisions every few seconds in enacting chaotic storage. The machines then track the locations of each item, but are then again dependent on human workers when an item inevitably gets mislabeled,

or a barcode is scratched, or an item falls off the shelf of a robot. The warehouse and workstation infrastructure attempts to track workers' time and behavior so closely that they are (in theory) reduced to unaware objects of the algorithmic machine, reduced to their ability to perform a monotonous function for hours. However, despite its reduction of humanity, the warehouse relies on this very humanness, capacity for judgment, and coordinative abilities to synthesize immaterial calculations with material realities and algorithmic logic with the chaos of the warehouse. A dialectical relationship exists between worker and machine, between chaos and logic, and between human and conduit. At the heart of this relationship is where the constant contestation in the warehouse is found as Amazon continually strives and fails to reduce oceanic humanity to streamlined conductivity.

That Amazon's fraught efforts to reduce its reliance on human workers through automation leave it nonetheless dependent on them is further proven through the very existence (and constant reinvention) of various strategies of pressuring and compelling worker obedience within the warehouse machine. The existential need for incessant worker productivity demonstrates that Amazon's model of voracious capital accumulation can only be fed through constant exploitation of human workers. The displayed metrics of productivity on workers' screens, the vague threats and pressure to improve these mysterious metrics, the on-screen directives, and the occasional visits by impersonal managers to enforce this pressure, work in tandem with a political economy beyond the warehouse characterized by the normalized capitalist domination of workers in workplaces where they must sell their time, labor, and agency in order to live. (Workers enter the warehouse understanding and expecting this–if they didn't, it is difficult to imagine the rare and brief visits by distracted managers and the on-screen

instructions holding the legitimacy to compel workers into compliance.) The efficiency-maximizing goal of technologies of algorithmic management mask their reality as instruments of domination that are critical to the project of reducing workers into the algorithmic machine. Amazon relies on the domination of its workers to achieve an integration of robotic-human, fixed-variable, dead-living labor that disempowers labor as much as possible while still managing to "secure collaboration in production processes in the face of workers' unruliness" (Delfanti 2021). Domination belies dependence.



Working and Existing Inside the Warehouse

My mind was somewhere far away, so it took me several moments before I realized she was talking to me. “How’re you holding up?” I paused from trying to stuff the awkward packaging around a decorative pillow into a too-small bin and turned to see a woman around my mom’s age standing behind my workstation. I’d seen her around before; she was a water spider, and moved around the warehouse with an unusual slow confidence. A significant social group of workers seemed to know her well, and I figured she must be among the minority of workers that had been at the warehouse for a year or more. I answered something about being pretty good, wondering if she could tell I was new or had noticed the notably high takt time on my screen. She said it seemed like I’d been getting a lot of “crappy WIP,” and then asked, “has anyone showed you the machine gun method yet?” As soon as I shook my head no, she turned to a messily piled pallet and sled next to my workstation and began searching through the boxes of items. I didn’t know what she was looking for, but she grabbed one she seemed to like and brought it over to the front slot of my sled, pushing aside the box of pillows I’d had there. “This one’s got 600” she said, pointing to one of the tiny labels on the box. She opened it and, sure enough, it was filled with small, individually wrapped pencils. A stower’s dream. She took my scanner, and began grabbing handfuls of ten pencils at a time (in training I had been clearly taught to scan and stow each item individually). Holding the stack of pencils, she scanned the top one’s barcode ten times in rapid, machine gun-like succession before stowing the handful and fluidly grabbing another. “They don’t really like you doing this but it helps a lot.” I looked up at my screen to see the timer repeatedly flashing as it reset each scan, struggling to keep up with the

speed of her finger. In even the brief time it took her to show me this new technique, my takt time had already begun to decrease. The knowledge passed, she turned to leave, promising to get me "some better WIP. I take care of my stowers."

The Amazon warehouse is designed and managed under a profit-driven focus on maximum and constant commodity throughput throughout Amazon's warehouse network. To further a political and economic strategy based on constant growth via so-called "customer obsession," and a pliable disempowered workforce, much of the coordination and management of labor and commodity flow is performed by computers. Algorithmic logic control over much of what happens in the warehouse results in aggregate efficiency growth for commodities but a disorienting and often chaotic working environment for workers. Most workers are placed in workstations, where they perform repetitive tasks for hours with little training, completely alienated from their contributive role to the functioning of the whole warehouse. Though it often didn't feel like it, the warehouse is completely reliant on these workers, and invests huge amounts of energy into studying and policing them to be more productive. Additionally, algorithmic management becomes ironically reliant on human workers in and out of workstations to synthesize the sometimes harmonic sometimes dissonant relationship between routine chaos and overall efficiency within the daily work process.

As Cowen demonstrates in *The Deadly Life of Logistics* (2014), the so-called 'business science' of logistics is a deeply political project of spatial calculation and the paranoid securitization of just-in-time circulation. The power and profit that logistics generates is conditioned on a perfectly organized and conducted orchestration of efficiency, reliant on a notion of despotic vision and control of many heterogeneous lifeworlds and actors (Tsing 2009).

Of course, despite growing technologies and regimes built explicitly for the surveillance of laboring bodies and the pathways of flow they create, the creation of such a complete hegemonic vision remains in the corporate imagination. As Charmaine Chua writes (citing Toscano 2014), "despite its gargantuan architecture and powerful imperial reach, the world of logistics is constantly undermined by its own contingencies and contradictions: precisely because of its aspirations toward omnipotence, logistics itself a deeply vulnerable entity, ultimately an "ideology (and fantasy)" of "full visibility as integral flexibility" (Chua forthcoming).

These scholars are all writing about the nature and vulnerabilities of globalized capital today as shown by the global logistics industry. However, for transnational corporations particularly, "the ideology is global and the enactment is local" (Tsing 2016). In other words, while characterized by corporate imaginings of intricately choreographed and frictionless capital flows, the power and vulnerabilities of logistics projects materialize locally. Corporations thought of as global "exist in fact only in particular places." Logistics' attempts at total vision, and its inevitable blindspots and vulnerabilities, exist within the Amazon warehouse as a constitutive space of supply-chain capitalism.

Amazon warehouses and the people within them are not exhaustively tracked nor controlled machines. In spite of logistics' emphasis on sight and intricate planning, reliance on datafied, automated, and algorithmically-driven warehouse management creates a warehouse in which knowledge (of hourly workers but also up the chain to and beyond management) is constantly sacrificed to the machine. The chaotic realities of a warehouse of physical commodities managed through immaterial code render the day-to-day intricate functionings of the warehouse aggregately calculable but individually unknowable to any human mind. A

computerized system of worker management—from the hiring process to management to disciplinary actions—creates a workforce that becomes somewhat mysterious to higher-ups at Amazon.

In order to keep track of throughput and efficiency, every part of the warehouse is constantly monitored and tracked, generating massive amounts of data which are translated into various metrics and sent to machine-learning programs, corporate offices, managers' desks, and workers' screens. These metrics distill and make legible the vast amounts of data that is the warehouse as seen by the computers that direct it. These numbers are tailored for the positionality of the individual's screen it will show up on, and individuals are provided only that information most likely to help that individual increase the productivity of the component of the work process they control. Workers receive minute details of their own speed and productivity, as well as that of the top performers in their floor or department. PA's and managers receive information about their floor or department as a whole, as well the speed, productivity, and general temporal behavior of every worker under their supervision. Amazon supervisors up the chain receive the metrics of managers, departments, whole workforces, warehouses, and warehouse networks.

A major function of the warehouse and its workers, then, is not just the creation of capital flow, but also data that then makes legible and effects managerial control over that flow (Delfanti 2021). The metrics delivered to managers and workers draw from this datafied vision of the warehouse to communicate a quantified measure of their efficiency. The metrics imbue zones of responsibility for workers and managers alike, as workers are seen as responsible for the precise speed at which products travel through their workstation as PA's and managers are responsible

for sections of floors of workstations. The metrics are then used in the application of productive and temporal pressure through quotas and comparisons across workers and floors. The metrics, then, are tools of domination legibilization (a "narrowing of vision" towards productive ends) (Scott 2020). The wealth of data from which they are distilled is of course not neutral, but a product of the warehouse-computer mind programmed not to actually exhaustively understand the warehouse or workforce but single-mindedly oriented toward the singular goal of maximized throughput. Of course, much of the productive (not to mention unproductive) activities within the warehouse cannot be tracked. The data generated by a productivity-oriented algorithm is at once a deeply oppressive and invasive method of worker control, and a myopic and fragmentary vision of the worlds within the warehouse. The chaos of the work process creeps in through these gaps in surveillance, and workers on the warehouse floor are positioned to see, manage, and carve out autonomy within these gaps. The strict temporal control of takt time threatens to consume the consciousness of a new stower, until a water spider accustomed to working *and living* within the contradictory logical-chaotic warehouse shows him how to use the machine gun method to get a leg up.

I soon grew accustomed to spending my 11 hour shifts constantly watched and confronted by takt time, a measure of my own (in)efficiency as a conduit of commodity flow. As weeks passed and I got better at stowing and became more conscious of rate as a consequential figure (though basically no more aware of what the exact range of possible consequences was for subpar performance), my takt time began to decrease from its early position somewhere in the low 20s. Various tips, shown to me by other stowers, water spiders, a manager, and automatically-displayed instructional videos, gave me strategies—both sanctioned and not—to

lower my takt time and increase my rate. I organized my sled in items from smallest to largest, with the smallest items on the near side of the sled within my reach, and the larger items on the end behind me a few steps away. I took advantage of small items whenever I could, hurriedly stowing them in every open cubby in a checkerboard pattern across the shelves (so as not to repeat my mistake of stowing them adjacently). I learned to search for opportunities to get rid of my biggest items whenever possible in hopes of replacing them with a box of more easily stowable items. And I got better and faster at the individual parts of the physical work: opening boxes, scanning the item correctly on the first try, recognizing and removing items that wouldn't scan, throwing away my empty boxes into the big cardboard container behind each stow workstation. Eventually, if I wasn't too unlucky with my items, I was able to sustain reasonably low takt times for several hour periods, totaling around 9 or 10 seconds scan to scan.

A meticulously maintained low takt time can be quickly ruined by any number of complications that pause otherwise constant movement of scan, stow, scan. Sometimes an item won't scan correctly and needs to be set aside for workers called Problem Solvers to look up and relabel or otherwise reenter into the system. Other times a traffic jam on the field (usually caused by a fallen item blocking the path of a robot) would cause the robot in front of my station to be unable to move to give me a new pod of cubbies to stow items in. Conversely, there were sometimes delays in the arrival of new robots with empty bins to stow into, and once I filled up the shelves of one robot and pressed the button to send it away I would be greeted by an empty field and have to wait for minutes for a new robot to arrive. Occasionally, for reasons I never figured out, an alarm would ring and every robot on the field would freeze, leaving all the stowers and pickers on the perimeter with no choice but to wait at their workstations until

whatever glitch was resolved and everything clicked back into motion. Finally, sometimes I would simply run out of things to stow, or WIP (an abbreviation for Work In Process that is used to refer to boxes or bins full of items that are currently in progress, or have not yet been delivered to a customer).

This happened for the first time sometime in my second week; immersed in my hurried rhythm of opening boxes, scanning, looking for open cubbies, stowing, and scanning the next item, I suddenly looked up at my sled to realize that it was nearly empty. Until that day, focused on my own work and takt time, I had been only vaguely aware of the workers, called water spiders, who would walk up and down the line of stowers with pallet jacks and box cutters, moving and opening big pallets of WIP, refilling sleds, opening boxes, and hauling away huge containers of emptied boxes that constantly accumulated at each workstation. I didn't know anything about the exact responsibilities of water spiders; I didn't know if they were paid the same as me or had any managerial authority. But in contrast to silent stationary stowers and rarely-seen, frequently distracted managers, their movement through the warehouse seemed to breathe something human into the algorithmic incessance of work in Inbound: Stow.

In this moment, though, no water spider was around, and I suddenly noticed the absence of someone to constantly feed my sled as I tore through boxes. After finding and tapping the "out of work" andon on my screen, I stood there stupidly, not sure what to do as my takt time quietly ticked higher and higher. This time, though, the number felt more meaningless and confused than calculative and condemnatory. My job was to stow items, and I was out of items to stow. I felt almost victorious as I looked around for someone to tell me I should be doing something besides just standing there, leisurely sipping water from my bottle. After a few minutes of this, I realized

a stower near me was leaving his workstation to pick up and load boxes from a nearby pallet himself, and my 40-something takt time suddenly regained its power as I guiltily wondered if I should have been doing that all along as well. As I timidly walked over to a half unpacked pallet near my workstation and started to wiggle boxes out through the half-open plastic wrapping, a water spider suddenly appeared. She was fast and apologetic as she waved me away from the pallet and swiftly tossed seven or eight large boxes onto my sled. “Sorry for leaving you hanging here! They just stuck me over here, I don’t know what happened to your guys’ water spider.” As she left she promised she’d be back soon to bring me some items that were “nice and small.” I started to scan in the new boxes, and the ominous bright red OUT OF WORK error message on my screen was cheerfully replaced by the familiar green “SCAN NEXT ITEM.”

Of course, on most days the biggest factor in a stower’s takt time is not the behavior of the robots, or the number of mislabeled items in the warehouse that day, or whether a water spider was reassigned to your floor during her break. The point of the number is to measure the temporal behavior of the stower themselves. In this regard, a worker’s time spent not stowing is just as if not more impactful than the speed of the actions undertaken at the workstation. A bathroom break, leaving to refill a water bottle, needing to find a new box cutter or scanner or roll of tape, pausing for a conversation with a water spider or another stower, or anything else that interrupts the scan stow scan frequency can threaten to raise your takt time and negate otherwise constant work.

On some days, my attention would drift away from the takt time on my screen. Encounters with managers were few and far between, and it wasn’t until my second week that a manager approached me. The interaction began with him distractedly asking me how I was doing

and if I had any questions, while I awkwardly stood before him, unsure whether to keep stowing or turn to give him my attention and while my screen's takt time rose and impatient robots lined up behind me. Finally, he pretended to notice my takt time for the first time (somewhere around 18s) and asked if I'd been having any problems. I can't remember whether I just said no, or mumbled something about having some difficult items, but I do remember him interrupting me to say to "just try your best to keep it under 12," and that I was "still in Learning Curve," before his walkie talkie blared and he bustled away. Associates who are still in their first month of training, as I was, are referred to as being in Learning Curve. Encounters like these would somewhat reignite my stress to achieve and maintain a low takt time, however the actual consequences for slow work remained no less mysterious. I never had a manager check on me more than once in a day. Yet, I still felt watched, and the nature of stowing meant I would think about my rate and takt every time I worked. But a different concern began to become principal in my consciousness during my shifts: the monotony of stowing increasingly became overwhelming, and I started spending my shifts mentally searching for ways to cope with the tedious repetition of my assigned task.

After a few days, the repetitiveness started to feel unbearable. I had worked repetitive jobs with long hours before, but this was different. The shifts became indistinguishable, and apart from the two 20-minute and one 30-minute breaks, nearly every moment within each shift started to feel indistinguishable from the last. Which particular pod you stowed the item in, and the kinds of items you happened to be stowing was all that changed, two variables which soon blurred into the unending rhythm of stow, scan, stow. After an hour of work, I would usually have stowed somewhere around 300 items, a number closely tracked and sent to a manager's

iPad, maybe included in corporate analysis of my Fulfillment Center's throughput. I would spend every minute of that hour frantically trying to distract myself from what I was doing, aiming to dissociate myself from the monotony. The easiest moments happened when I would finally lose myself in some train of thought. The topic didn't matter, I would search for anything that might accomplish this distraction, letting me forget where I was, what I was doing, and how much time had passed, and for a moment escape the minutely tracked and timed repetition that lay behind and ahead of me.

After just a few days of work, I remember coming home and asking my family for any ideas they might have about how to occupy myself while I worked. My grandma thought of a memory game we used to play on long car rides, where everyone takes turns naming things they'd bring on a pretend camping trip starting with each letter of the alphabet. "I'm going camping and I'm bringing an Apple," then "I'm going camping and I'm bringing an Apple and a Baseball," and so on through the alphabet or until someone forgets an item. (I'm probably fortunate that the noise of the warehouse drowned out the sound of me vocally planning my alphabetic camping trip as I handed robots packages of Disney-themed erasers.) My mom suggested I try to write stories in my head. I made a list of ideas on my phone, hoping that I could turn to it in moments of desperation. I tried placing myself in scenarios, planning heists, or zombie apocalypse survival strategies (often set in the warehouse), or alternatively imagining myself in a Walden-like scenario wandering in a forest. Sometimes that could occupy me for a bit, but usually I would grow tired of the conjuring, or simply be unable to get my mind away from the beeping whirring world I was submerged in. I tried coming up with different melodies and rhythms, or stories, but would find myself quickly falling into patterns of repetition. If I did

think of something I liked, as much as I tried I could never manage to remember it by the time my next break arrived and I could write it down. On one particularly desperate day I simply tried counting and seeing how high I could go; I made it to about 700.

Sometimes, I would turn to the products to occupy my mind. One day, after me and my coworkers received texts informing us of one or more positive COVID cases in our warehouse (but no information on which department or how many workers it was), I decided to try and count how many items I was stowing really seemed "essential." I did this several times, and every day found only a handful of items that I thought could reasonably fall into this category, mostly occasional packages of food. I soon realized the undisguised reality that the vast majority of the meticulously timed and tracked work we were doing was not an essential service, but a continuation of the warehouse's primary profit-driven function fueled by a sudden surge in consumer demand. Despite Amazon's rhetoric to the public and politicians, this was plainly evident to anyone paying any attention at all to the items we were stowing, picking, and packing.

Before I started this game (which like the others I stopped after a few days), I had paid almost no attention to the objects passing through my hands. I had been told to glance at the screen and confirm that the item it showed matched what I had scanned, but I never once caught the system being wrong and soon stopped checking at all. The size of the items mattered, for finding a bin to stow them in and for ease and speed of stowing, but what they actually were had no relevance to the work I (nor most anyone else in the warehouse) was doing. Because of the intentionally randomized nature of commodity storage at the warehouse, stowers have no role in where any individual or category of item is stowed; their task is moving the abstracted items at a high speed from box to moving shelf. Especially those stowers who manage low takt times of 7

seconds or less, stowing 500 or more items an hour, have no time to consider the specific objects they're stowing.

Nonetheless, pandemic-themed curiosity had temporarily pulled my attention away from the average speed of WIP through my workstation and to the objects themselves. Sometimes I would think about where the items might be going; I would imagine a birthday party at which a remote-controlled speed boat might be unwrapped, or the new parent ordering a package of pacifiers, or whoever it is that buys their dog a turkey costume. But this would soon get exhausting. The sheer amount and randomness of the items was an unintelligible flood that threatened to overwhelm anyone who dared try to make sense of it as it roared through their hands. A book from Oprah Winfrey's book club, a three-pack of miniature staplers, a bag of lavender-scented guinea pig bedding, an android charger, a box of diapers, a stack of printer paper, an RV faucet attachment, a book by a repentant Trump aid, a box of ramen, Ghostbusters wristbands, a purple memory-foam neck pillow, a two-pack of plastic storage containers, a bottle of vitamin C tablets. Staring into the collective mouth of anonymous online consumers, I was met with an indecipherable cacophony that rendered my role more opaque, not less. I soon gave up watching the products as a way to understand the work I was doing or a source of entertainment. They weren't made for that.

The hours went by suffocatingly slowly. At first I would check the time constantly, but I found that made the time go slower. I vividly remember the sinking feeling of coming back from a break, working for a while, and then checking the time to see less than 5 minutes had passed. I started to go as long as I possibly could before I checked the time, and set alarms to notify myself when I'd reached a break time to avoid a constant awareness of the painfully passing

minutes. I grew to resent the items I stowed. When I accidentally slipped out of whatever mental world I was trying to escape into and noticed the specific items I was pulling out of a given box, I resented them and the company that made them and the person that bought them. But mostly, I hated them abstractly, I hated their size and their weight and their infiniteness. The bigger or heavier or more of each item there was the longer it would stay in my hands and the more I hated it.

As the Amazon merchandise and I's antagonistic relationship flowered, and the sharpness of the threat of a bad takt time dulled, I began to crave moments of stoppage. Whatever the cause (as long as it wasn't my fault), I looked to any interruption in the incessance of stow scan stow like an oasis, savoring the quiet arhythmic moments whenever they arose. On the rare moments when our constantly counting scanning screens froze, either because of a glitch in some algorithm or a fallen item on the Field creating a swelling traffic jam of confused robots, I would walk from my position by the corner between the Field and my sled of items, and sit, elbows on my knees, on an upside down tote that had usually already been placed there by whoever was stowing before me, probably for the same purpose. Temporarily untracked and uncounted, stowers would sometimes turn and talk to those at neighboring stations during these moments. Others, like me, would just sit.

Eventually, I would try to create these pauses for myself. The most obvious way to do that was by taking bathroom breaks. Typically, each floor has two bathrooms, spaced out on opposite sides of the warehouse. Because the bathrooms themselves take floor space, most stations are on the other two sides, meaning most workers have to walk the full length of one side of the building and more to reach a bathroom. This can be tiring and painful on the concrete

floors, and the several minute walks there and back can significantly raise a worker's takt time, lower their rate, and count as TOT. It also means a several minute break from standing and stowing. On days when I felt particularly crazed, I would treat myself to several unnecessary trips to the bathroom or water refill station. If I was fast enough for long enough before and between these trips, I could usually manage to take them without hurting my takt time too irreparably (especially if I found a box of small items and used the machine gun method before or after to buy myself some room). The stalls in the bathrooms became an important space. Beyond their obvious uses, they contained the only seat in the building outside of the clearly demarcated or physically separated breakrooms and the tall manager chairs. Additionally, they were the only space that offered privacy. The silence of the stalls would startle me, and when I entered I would feel myself loosen, momentarily escaping the inescapable publicity of every other part of the warehouse. I would sit on the lid of the toilet on my phone, momentarily escaping the constant movement expected of me. I needed the escape, but, unlike while I was working, I would never let myself lose track of the passing minutes. I had to be careful not to spend too long hidden away.

A few weeks into my time at the warehouse, everyone began getting texts one or two days before their week started. "Hello Amazonians, Inbound and Outbound Departments have called 11 hour shifts for Night Shift. On July 13th - July 18th, your regularly scheduled start of shift time will be updated to be 30 minutes earlier and end of shift end of shift 30 minutes later. Please refer to your A to Z for updated schedule changes. Reply STOP to stop anytime." While I hoped this would only last for a week, each weekend a new text would arrive extending the shifts another four days. For the rest of my time at the warehouse I became used to being greeted every

weekend by a new alert that the 11-hour shifts would last for this week, too. Before this change, my shift started at 6:30pm and ended at 5am (10 hour shifts, plus two paid 20-minute breaks and one unpaid 30-minute lunch). The extended 11 hour shift ended at 6ammeant that I would enter the warehouse before the sun had begun to set and leave when the sun had already risen. I didn't notice the change right away, but eventually realized that because of this timing, I would go entire work weeks without seeing the darkness of night, going straight from daylight into the bright fluorescent warehouse and back into the daylight of the next day. This started to wear on me, and the arrival of the first sunset on my first day off after a week of work always made me emotional.

I of course wasn't the only one who struggled with the new shifts. Not all workers drove home and went straight to bed like I did, and many had second jobs or kids to drive to school or other obligations that Amazon's unpredictable daily last-minute shift extensions carelessly impeded on. However, there was a hidden benefit of the extended shifts that revealed itself a few days into the first week on the new schedule.

My shift started in the best possible way: a stoppage. One of my coworkers later told me that a manager had told him the extended shifts were a corporate directive that was mandated regardless of the specific metrics of a particular facility, causing some warehouses to hit TCAP. TCAP, which stands for Transportation Capacity, refers to the limited available logistics capacity of UPS, Amazon's subsidiary contracted "Delivery Partner" companies, and Amazon itself. The finite number of trucks and drivers to move the outbound flow from the warehouse on to delivery stations and eventually homes–a labor force further reduced due to COVID–presented an external limit on the throughput of the warehouse that managers had little control to change or

predict, and hitting TCAP meant the warehouse's throughput had extended beyond this limit's capacity. The extended shifts, or MET (Mandatory Extra Time) mandate, combined with a regional directive not to allow VTO (Voluntary Time Off) as well as a significant amount of workers taking available VET (Voluntary Extra Time) shifts, resulted in more workers than available work (apparently a result that every manager at our warehouse could have predicted). In various departments at various times, throngs of workers would stand around as managers frantically shuffled them around, giving them various tasks and assignments in an attempt to smooth their efficiency metrics.

On this day, when I walked out of the stairwell to my assigned floor I was greeted by a crowd of about 25 workers all standing around, waiting to be assigned a workstation as multiple managers frantically paced around and radioed each other searching for available workstations or other assignments for us. As the crowd of unassigned workers swelled from 25 to about 40, the power and feasibility of managerial control over our minute actions was eroded by workers who were doing nothing because they had nothing to do. Because we weren't logged into any workstations, rate and takt time had no way of tracking or controlling us. Only the third number, TOT, built to control the un-logged in worker, held any weight in a moment when a crowd of workers were loose and untracked. In an impersonally apologetic tone that mimicked an anxious customer-service worker, a manager assured us that the time we spent waiting for an assignment "won't be counted towards TOT." Eventually, another manager came by and started approaching each worker asking for their ID number so that she could "exempt our TOT". At least one worker refused. The manager impatiently explained that it was "for your benefit," but the worker didn't pull their ID out, and eventually the manager shrugged and continued along the line. This

employee was one of many members of the warehouse workforce whose English was limited, and as the manager made their way closer to me I wondered if this worker didn't understand the situation or if they knew something I didn't.

Eventually a few workers began to sit on the floor and use their phones, with more and more following. Before COVID, phone use outside of break rooms was strictly prohibited. After COVID, phone use was permitted only in the case of "familial emergencies," one of many warehouse policies launched by Amazon during the beginning months of the pandemic likely for defensive reasons. Sitting on the ground or anywhere not in the break rooms was also not allowed. I marveled at the managers' failing attempts to retain control as these rules were instantaneously rendered virtually unenforceable by a group of workers unorganized and untethered. Indeed, the physical position of our bodies, in the normally sleek spatial efficiency of the warehouse, felt strange and aberrant. Instead of every worker evenly spaced out at individual workstations, with a select few working as water spiders coordinating the movement of WIP and waste in between the separated stations, workers sat and stood and paced in a shifting ovular crowd. Most of us stood alone, with a few pockets of pairs and trios of workers who knew each other standing together and talking. Occasionally managers would shout at everyone to "maintain six feet please!" which resulted in a brief separation and then gradual regathering as workers shuffled to stay out of the way of water spiders who had arrived early enough to receive floor assignments and were trying to pull pallets of WIP through the crowd.

Eventually the crowd was separated and dispersed around the warehouse. One manager asked us to "raise your hands if you've been here for more than a week," and then, "keep your hands raised if you want to get universal trained." Not knowing what this meant I agreed, and

after more waiting and shuffling around I was eventually trained to stow on a slightly different, older type of workstation which required manual scanning with handheld scanners instead of holding the item beneath an automatic scanner (this type of workstation is the only one on which the machine gun method is possible). By the time the training was completed and I was logged into and stowing at my own workstation, more than half my shift had passed, a glorious reality that made the last five hours float by easily.

The next night, managers continued to struggle to find enough stations for the amount of workers present. As a group again began to accumulate, my manager asked if any of us were Universal trained. I raised my hand and was sent to a universal station on the other side of the floor which I tried to log into, only to find my access denied. I walked back around the building, found the manager who had sent me to the station, and asked her what I should do. She told me to find the PA (Process Assistant) in charge of that side of the floor and ask him. I wandered back around, not knowing who I was looking for. As I was walking I ran into another stower I knew who was my age and had been in my initial training group. I told him how my day had been going, and he told me he'd spent more than an hour the day before being sent to various workstations that managers thought "should be empty," only to find workers in them and have to walk all the way back, find his manager, and get sent to check at another workstation. We laughed about how stupid it seemed, and then cheerfully he said, "at least it's better than stowing!" I agreed. Eventually I turned a corner and a friendly PA seemed to notice my lostness and asked if I needed help. I told him the situation, and we walked over together to my original station where he tried and failed to log me in himself. He then went on his laptop for a few minutes to "fix my permissions" and told me to wait 15 minutes and try again, and if it didn't

work come find him. I happily did this, it happily did not work, and I again began wandering around looking for him to tell me what to do. Eventually I found him and told him the situation. After a long moment of neither of us knowing what to do, he said “I’m actually short a water spider, would you wanna get trained in that?” Happy to do anything to continue to break up the monotony of stowing, I agreed.

Similarly to my training in stow, I was thrown into the job and expected to be doing the work with moderate competence after less than an hour of training. However, rather than that competence being determined by a computerized metric, I was shown by another human one-on-one the various tasks of the job, and then checked in on repeatedly throughout the rest of the shift to see how I was doing. It quickly became obvious that the room for error in this job was different than for stow. The job is one of the few in the warehouse that is untracked; you don’t check in to a workstation, and there is no rate or takt time or other metric tracking your minute actions. Yet, if a water spider does their job incorrectly, the rate of every stower in their area of responsibility (which can range from a quarter of a floor to an entire floor of 30? stations) will suffer, resulting in bad metrics for each individual stower, the manager or PA in charge of the floor, and potentially the throughput of the entire warehouse.

The PA showed me the basic functions of the job: how to use a pallet jack to move WIP off the elevator and around the floor, how and when to order more supplies on the elevator from the floor below (WIP, or big boxes to hold cardboard trash called gaylords), how to open and distribute boxes of items of varying size and kind to each stowers sled. After a few minutes, the PA introduced me to an experienced water spider I’d be working next to, and left her in charge of telling me which stations to handle and how to keep everything moving. Water spiders manage a

section of a floor of workstations, ensuring that each station has plenty of WIP to stow and isn't overflowing with empty boxes of stowed WIP. They spend their shifts coordinating the flow of commodities coming up from the docks and into the stowing stations, connecting the departments and enabling efficient and constant work of the stowers under their jurisdiction (Shmula 2017). The name itself–a term borrowed from lean manufacturing techniques methodology–shares the -er ending of other warehouse positions (packer, picker, problem solver, stower), but differs in that it does not immediately describe the primary task of the position. This may be because of the variable nature of the job; water spiders exist across departments and warehouses (not just in stow and not just at fulfillment centers) and fulfill various critical tasks on their floor. It may also be because an accurate description of a water spider's primary task–managing, coordinating, distributing–might sound, conspicuously (and correctly) like a position involving increased responsibility and potentially implying a consequent pay increase or, perhaps even more problematically, simply an increased human control over the warehouse's functioning. The term, evocative of an insect dashing from place to place in water, implies constant movement and integration in and amongst capital flow, as water spiders work flexibly and continually to sustain–or, in reality, to produce–that flow.

The work of water spidering immediately felt different from stowing. Unlike the stationary monotony of stow, the work of a water spider involves constant movement and at least some variation in tasks. Instead of standing contained in a work station being directed by a screen, water spiders walk back and forth through the floor, deciding in each moment what to do depending on the needs of the floor and their work stations. Perhaps most importantly, water spiders are untracked. Because of the variable and uncontained nature of the work, (and the fact

that water spiders perform almost all of their work without any electronic equipment except for occasionally a hand scanner to check container amounts), the work is not temporally trackable. There is no rate, no takt time, and no Time Off Task. The need for flexible coordinative labor to manage the flow of commodities from inbound pallets into work stations grants the water spider a rare degree of freedom. The only surveillance of water spiders is performed by the managers overseeing the floors who might periodically (but mostly don't) walk through and make sure the stations are well stocked and tidy. The degree of surveillance and domination enacted by these managers varies, and the more I water spidered the more I learned which managers were better or worse to work under and would ignore my shift group's floor assignment and go to the floor of more pleasant managers. I would usually try to find the PA who trained me, as he generally would trust me to handle my section, and avoid the floor of some other notorious managers who were known to yell at their spiders if they happened to walk by a station that was out of WIP or saw one too many overflowing Gaylords. However, regardless of the style of the individual managers, the product of water spider's labor was surveilled, but their minute moment-to-moment actions were not.

After I was trained, I began water spidering as often as possible. The work was hard; for the entirety of the shift I was constantly moving, walking from station to station pulling a pallet jack, reloading stower's sleds with big boxes of WIP and taking away their full gaylords. Instead of standing on a rubber mat all day, water spiders spend their shifts walking and hauling on the concrete floors of the warehouse, and after a few days I began coming home with aching knees and feet. However, while the job did become monotonous and repetitive in its own way, the lack

of rate and the memories of stowing kept me asking managers if they needed a water spider every day that I felt like my body could take it.

Water spidering revealed itself to be more complex the longer I did it. The difficulty and intensity varied widely; some days there would be many more water spiders than needed, or the stowers at my workstations would be stowing slowly, and I would spend most of the shift waiting for things to do and finding chances to sit without being noticed by a manger. On other days I would end up overseeing long sections of floors with fast stowers, and would spend my whole shift constantly moving and trying to find enough WIP to feed the sleds. In order to be efficient and not let tasks build up, I had to plan my trips across the long floors carefully, aiming to move WIP and trash efficiently in both directions as I made trips to the elevators which bring new WIP and take away full Gaylords. I also had to be constantly aware of the widely variable speeds of each stower, giving the faster ones boxes with as many items as possible and making sure to keep their sled as full as possible at all times, while learning I didn't need to visit the slower stations as frequently.

As I had already noticed from my time stowing, water spider and stower relationships are complicated and consequential. Often, water spiders are the only people a stower will interact with for an entire shift. Water spiders have significant impact on the work process of stowers, and the size of items, whether the spider takes the time to open each box, how varied the WIP is, how full they keep the sleds, and how regularly they switch out the Gaylords all can powerfully shape a stower's day. Conversely, each stower can affect a water spider's work, in smaller but nonetheless impactful (when repeated for hours throughout a shift) ways. The speed of a stower, whether they flatten cardboard boxes before they throw them out, and whether they pick through

their WIP or stow everything they receive randomly can all affect how frequently a water spider needs to visit and maintain their workstation. The relationship between stowers and water spiders can often become antagonistic. Under the unending pressure of takt time, stowers can become frustrated if they continually receive large WIP, or if their water spider isn't restocking their sled to meet their pace. Tension can also arise between water spiders as they walk the floor gathering pallets of WIP. Because boxes with high unit-per-box amounts are valuable to stowers for their ease of stowing and ability to lower takt time, and valuable to water spiders as WIP that will occupy their stowers much longer than a box of just a few items, competition for good WIP (or other supplies if they begin running low) can sometimes stoke animosity between workers. In various social contexts, water spiders are repositories of human consciousness within the machine, the only human component of a stower's workflow, adding a human contribution to the workplace that is needed by Amazon for their contradictory, algorithmic-human, logical-chaotic warehouse to function. And unlike workers in stations, water spiders do (indeed must) understand their role in the production process, their place in the machine as critical agents of coordination. In the deskilled, disempowered, automated, algorithmically managed warehouse, water spiders are breathing exceptions, examples of Amazon's failure at completing this project and its inevitable reliance on humanity.

Understanding the intricate social relationships and dynamics of water spiders is key to understanding the material and social realities of any particular Amazon warehouse. In her paper on political possibilities and work at Amazon warehouses, Nantina Vgontzas writes about how the warehouse she worked at used water spiders to continuously enforce a "culture of peer pressure" (Vgontzas 2021, 16). Workers chosen to be water spiders tended to be "boosterish

men," who would frequently ask stowers insinuating questions about rate, chat with managers, and enact subtle worker-to-worker discipline and surveillance over the "older and feminized" workers who remained the "silent majority." While the gendered nature of the roles was not as stark at my warehouse, this dynamic resonates with my experience stowing. However, my experience also reveals the diverse realities of sociality at Amazon warehouses, and the ways in which it is shaped by material realities of production. At the time that I worked there (and as much if not more so now) Amazon was hiring workers at a dizzying pace, at times struggling to meet its own quotas. Accordingly, if there was an intentional selection of a certain personality of workers for the role of water spider, it had certainly been at least partly abandoned by the time I began working there. The water spiders that I met tended to be longer-term employees who had a clear grasp on the workings of their department, but with some exceptions were no more "boosterish" than the average stower. To take myself as one limited example, I landed the job not because of my passion for accelerating the flow of commodities through work stations but because my screen wouldn't let me log in.

During my first few weeks water spidering, I worked hard to keep my stowers sleds constantly and completely full, nervous about upsetting experienced stowers who were careful and skillful enough to maintain low takt times. At the end of one long shift with an extremely fast stower who I continually worried was upset at having been assigned an inexperienced water spider, I remember the relief that flooded me when at the end of the shift, as I placed a full pallet of WIP for the next shift by his station and he was logging out of his screen he half turned towards me and mentioned quietly, "you did good." Other times, a stower might let me know that they weren't pleased with the WIP I was providing them. This was something of a gamble,

as water spiders are fully capable of continually feeding stowers they don't like 'crappy WIP' if they choose, further stoking tensions and raising takt times. But the gamble always worked on me and I capitulated to their wishes for smaller, more stowable WIP.

On one day the floor I was on had been stretched thin, and me and the one other water spider split the full floor of stations between the two of us. I was constantly busy, and quickly began trying to figure out the speeds and attitudes of my various stowers so I knew how often I'd need to visit each part of the floor and could plan my trips more efficiently. The very last station on the floor in the back corner was occupied by a stower about my age who I later learned had been at the warehouse for several years. (When I stowed these were my favorite stations; the corners cast shadows on the fluorescent lighting, it was farther from the crashes and whirring of conveyor belts more towards the middle of the floor, and it out of the way of management, making it the darkest, quietest, least surveilled corner of the warehouse.) After a few visits to the end of the floor to check on his station, I became confused. Even after 10 or 15 minutes, his sled would remain full of the boxes of WIP that had been there before. I braced for our encounter to become antagonistic, wondering if he was struggling with the WIP I'd given him. However, each time I came by he said nothing to me. Eventually I realized I almost never saw him stowing, and as the shift went on (and he presumably figured I wasn't going to say anything), I would mostly find him sitting on a bin on his phone. Every now and then he would slowly stand, walk over to his sled, pick up and stow a singular item, and saunter back to his seat all while keeping his eyes on his phone. I watched in awe as the rest of the shift passed, and gratefully realized his work station would be one less I had to worry about refilling that night.

It was only after talking to another water spider that knew him that I learned what he was up to. Apparently, Time Off Task at work stations only begins tracking idle workers after six minutes of inactivity, at which point it starts counting up from those six minutes and sending the total to managers. While consequences for a bad rate or takt time are frequently threatened but rarely enforced, if managers see workers with high or frequent periods of TOT they will almost always confront the workers about it. Over his years at the warehouse, this stower had apparently found a way to avoid this confrontation while still working as little as possible. I watched him that night, sitting on his phone, only standing up every five minutes or so to scan one item, reset the TOT clock, and avoid his behavior surfacing on manager's screens on at least one metric. I ended up water spidering for him a few more times after that night, and was glad each time he was on my floor as his presence meant one station on my floor that would only need a visit every few hours, increasing the odds of those rare and wonderful moments in a water spider's shift when every sled on the floor is fully stocked and the spider can slow their pace, chat with a worker, get some water, or just wait. As he carved out space for rest in the quiet gaps between Amazon's myopic vision of itself, he, deliberately or not, made space for me too.

After my first few weeks, I remember telling a friend that the warehouse felt more like being in an airport full of strangers than a workplace with coworkers. Most people didn't seem to know each other, and people would often keep to themselves for the entirety of their shift. When I asked workers about their experience in the warehouse, feelings of solitude–despite the number of workers in the building at all times–were mentioned repeatedly. One worker, a middle-aged woman who had been at the warehouse for a year, seemed to see it as a plus. "I like that I can go in and out and keep to myself," she told me. Among the other workers I talked to,

this positivity was not repeated. One worker, a younger woman who had also been at the warehouse for about a year, spoke plainly about her experience. She told me her first few months "felt like torture," and that she "felt so isolated." When I asked her if she'd made friends at the warehouse she said she knew "three or four" other workers, but told me "almost nobody" makes friends in the warehouse, and that the main social groups are friends or families that already knew each other before starting work there. Another worker my age (who had been there 45 days) affirmed this story, telling me her only friends in the warehouse were her roommates who also worked in the building.

But there were exceptions. One worker I talked to (an older man who'd been at Amazon about a year) said he had many friends in the warehouse, several of whom had been there since the building's opening five years prior. Another worker at a different warehouse told me that long-time workers all tended to know each other somewhat, even if not by name, merely by seeing each other enough times. I myself, after many weeks of repetitive isolation, eventually managed to make some friends, or at least found people I could talk to during breaks and pauses in work. This was much easier when I was water spidering, in an untracked and mobile position, than when I was stuck and surveilled stowing in a workstation.

But even before I learned a handful of my coworkers' names, or on days that I didn't see them, I started to recognize the faces of workers I would see repeatedly in the stow department. Solidarity in the warehouse came in fleeting and fragmentary moments, but it came. Sometimes, the chaos of algorithmic management produced it, or at least required it. I only managed to find my way around the warehouse during my first week (or knew to take my first break) because of the help of other workers. Workers generally didn't trust managers, and, in moments of crisis and

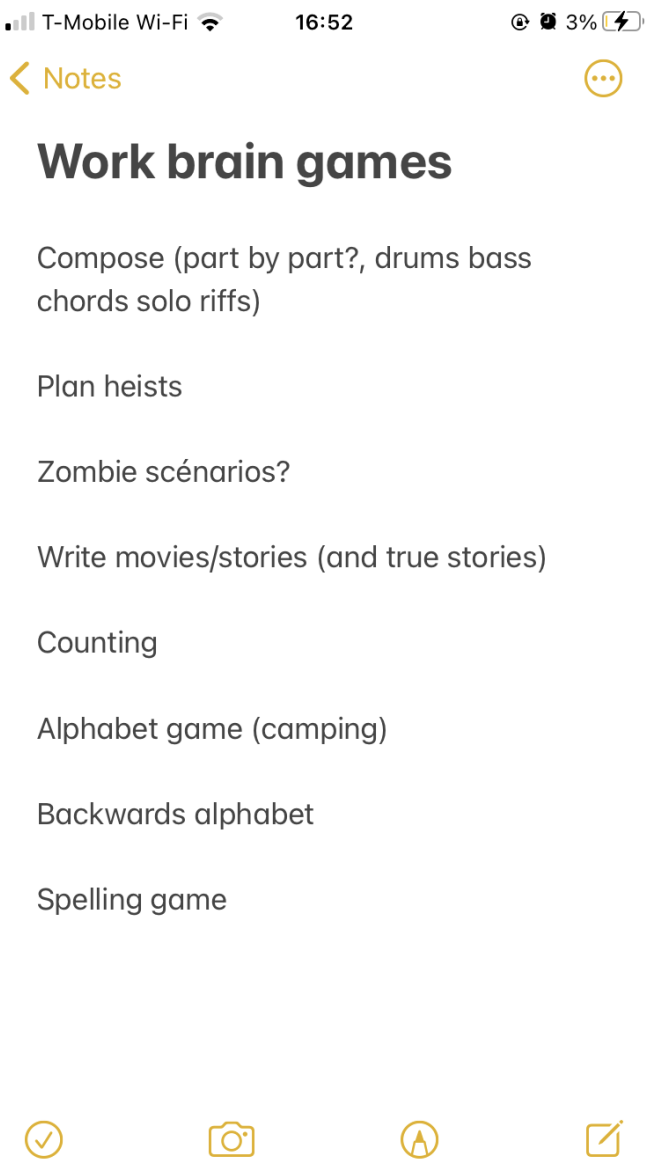
stoppage, when managers frantically shuffled people around, would often turn to each other to figure out where they should really go, which directions they should really follow.

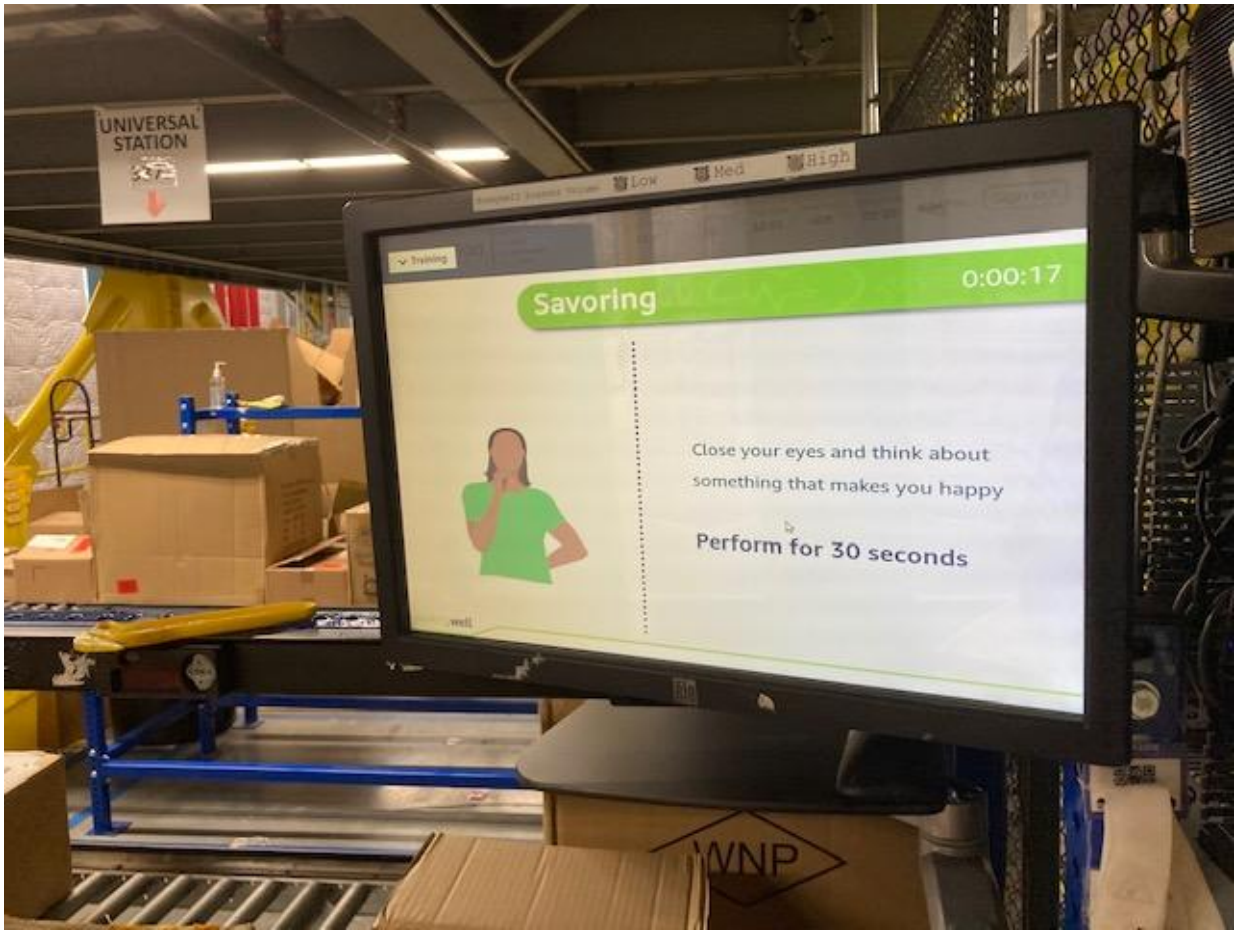
But beyond just managing and orienting each other amongst the chaos of algorithmic management, there was something more fundamental about the experience of working at the warehouse that made me feel connected, even to workers whose names I'd never know. To work at Amazon is to have one's autonomy and humanity continually compressed. A floor of workers stand in workstations for hours, distanced but adjacent, stowing thousands of items they have no connection to, as a manger declares over a loudspeaker that whoever gets the "lowest takt time on the floor" gets the honor of walking with a manager to get a free "treat" from the break room vending machine.

The mystery of rate, takt time, and TOT, while sometimes competitively reinforced by a handful of enthusiastic stowers or water spiders, was more often decoded and worked out in break room conversations, as workers together pieced together information from older workers and sympathetic PA's to devise ways to skirt the despotism of the algorithms. Noticing a worker struggling to make takt time, a water spider might intentionally load their sled with small items, not towards the end of increasing productivity, but to loosen takt time's grasp on that worker, to give them some breathing room. Even isolated and alienated from one another, spaced out in individual workstations and consumed by the pressures of making rate, a certain solidarity still permeates the stale air of the warehouse.

At almost every workstation, along with the sled of items, the mat, the scanner, the camera, and the robots, one other feature would often be found. On the back of the mat, usually placed up against the Gaylord to make it less visible to a passing manager, would be an

upside-down bin placed there by a stower before. Anticipating a moment of stoppage, a break in the flow of commodities through the station caused intentionally or not, an emptied vessel for those commodities would be repurposed into a furtive place for rest.


T-Mobile Wi-Fi
16:52
3%
Notes
Work brain games
Compose (part by part?, drums bass chords solo riffs)
Plan heists
Zombie scénarios?
Write movies/stories (and true stories)
Counting
Alphabet game (camping)
Backwards alphabet
Spelling game


UNIVERSAL STATION
Low
Med
High
Savoring
0:00:17
Close your eyes and think about something that makes you happy
Perform for 30 seconds
VNP

Conclusion

On April 1st, 2022, workers at an Amazon fulfillment center in Staten Island successfully voted to unionize, creating the first unionized Amazon warehouse in U.S. history. Organizers overcame aggressive anti-union tactics, regular mandatory anti-union meetings, the unjustified arrest of organizers by the NYPD, and millions of dollars of funding for anti-union consultants. Amazon Labor Union (ALU) is entirely independent and worker-led, started just over a year ago by former Amazon employee Chris Smalls and current employee Derek Palmer. Chris Smalls, the ALU's interim president, was fired by Amazon in March of 2020 after leading a walkout to protest Amazon's disregard for its workers health as it continued operating warehouses at full capacity even as COVID-19 tore through its buildings. (Chris Smalls had been mistakenly fired by Amazon once before this for allegedly stealing two minutes of company time.) In explaining the unprecedented victory, ALU organizer Justine Medina had this to say:

> "My quick-and-dirty analysis of the Amazon Labor Union's successes so far is pretty simple. We just did the thing you're supposed to do: we had a worker-led movement…a Black- and Brown-led, multi-racial, multi-national, multi-gender, multi-ability organizing team…It's the hard work, every day: workers talking to workers. Not just media games, but solidarity, daily analysis, and adjusting as needed. It's working as a collective, learning together, and teaching each other. Get back to fighting form. That's how we won…What I'm describing wasn't my plan, but the efforts of Amazon workers who got fed up with their mistreatment…This was a truly collective effort, led by some brilliant

> Amazon workers thrust into organizing by the pandemic and the conditions of their lives."

The Staten Island warehouse workers' strategy and victory powerfully demonstrates the potential of worker-lead, shop-floor oriented movements that center the lived experiences and knowledge of the workers who make Amazon. That Amazon was caught off guard, and struggled frantically to combat the worker-lead movement; organizers said that the regular anti-union meetings and strategies mostly backfired and offered galvanizing organizing opportunities for ALU workers.

This should be of little surprise. As I have argued, Amazon's high-speed low-cost model of algorithmic warehouse and workforce management constantly minimizes and strives to reduce the humanity of its workers. Stuck in a myopic calculative view of the warehouse that narrows Amazon's vision towards the singular goal of throughput and profitability, Amazon has proven itself to be ruthlessly efficient but nonetheless vulnerable. ALU and other successful grassroots Amazon worker-lead movements, such as Amazonians United, have had success largely because of the centering of worker experiences inside the warehouse, and demands for changes on the shop-floor level. Writing about the struggles of striking unionized Amazon workers in Germany, Vgontzas argues that organizing campaigns must center worker experiences in the work-process at the shop floor level in order to build out power and solidarity across chains of warehouses (Vgontzas 2020).

In an interview for Jacobin, Chris Smalls spoke about an Amazon worker wellness program. "They had a rollout where you're at your station working and a message would come up that would say, 'Take thirty seconds to meditate.' Thirty seconds is interrupting my flow.

When you're working there, you don't want to be interrupted. You want to be in your flow. You're not even trying to think about the time. Some people cover the time on their machines because they don't want to see it. They just want to get their shift over. To be interrupted to meditate for thirty seconds and you're working ten hours, eleven hours is just a waste of time. A lot of workers don't like it" (Smalls, 2021). I remember hating these breaks when they popped up on my screen too, shaking me out of whatever mental world I was trying to lose myself in. Sometimes the screen would offer you a choice, asking you to select a "mental" or "physical" activity (if you didn't choose within a few seconds it would pick for you). I chose mental, and the screen simply read "close your eyes and think about something happy for thirty seconds." This supposed intervention towards worker wellness, and its failure to even approach an actual understanding of the experience of warehouse work, reveals the myopia of Amazon's datafied and profit-focused image of its workforce. Obscene dehumanization is a routine and implicit component of Amazon's technique of worker control, leaving it deeply vulnerable to a campaign like ALU's that centers this experience and channels the inherent knowledge and energy of workers to resist it.

When workers chant "we are not robots" (Delfanti 2021) or question why they are deemed essential workers while shipping unessential items in a pandemic, or resist the regimented incessant control of their time (Vgontzas 2021), they begin a rethinking—and potential remaking—of societal systems of work, provision, and economic coordination. Since the pandemic, Amazon has tried to brand itself as a firm for the public good, delivering essential goods to those who need them, and has indeed become more and more relied upon for this function. While systems of societal sustenance are needed, the modern corporation, focused

singularly on generating shareholder profit at massive social cost, is, of course, not the only way in which flows of provisions can be coordinated.

Throughout these pages I have used the word efficiency to describe Amazon's character. But this is only partly true. As Sanjukta Paul argues, although often used as one word, "productive efficiency and allocative efficiency are no more than mere homonyms. This pair of homonyms, both terms of art, are all the more likely to blend in everyday legal and institutional practice…EfficiencyA is used to discipline workers—and anyone else whose economic coordination is not mediated by a large firm—even as efficiencyB is deployed to justify coordination controlled by large firms" (Paul 2019, 51). There is no doubt that Amazon is remarkably efficient in generating shareholder profit and coordinating the almost instantaneous delivery of products to customers' doorsteps. But allocatively, Amazon's function is obscenely inefficient; as capital circulates at rapid speeds, ecological devastation looms, and workers sell their time and lives to deliver random commodities as fast as possible. Worker-lead movements to build the collective power and resist the dehumanization of workers embody a vision of a society that truly centers the provisioning of life and centering of humanity.

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