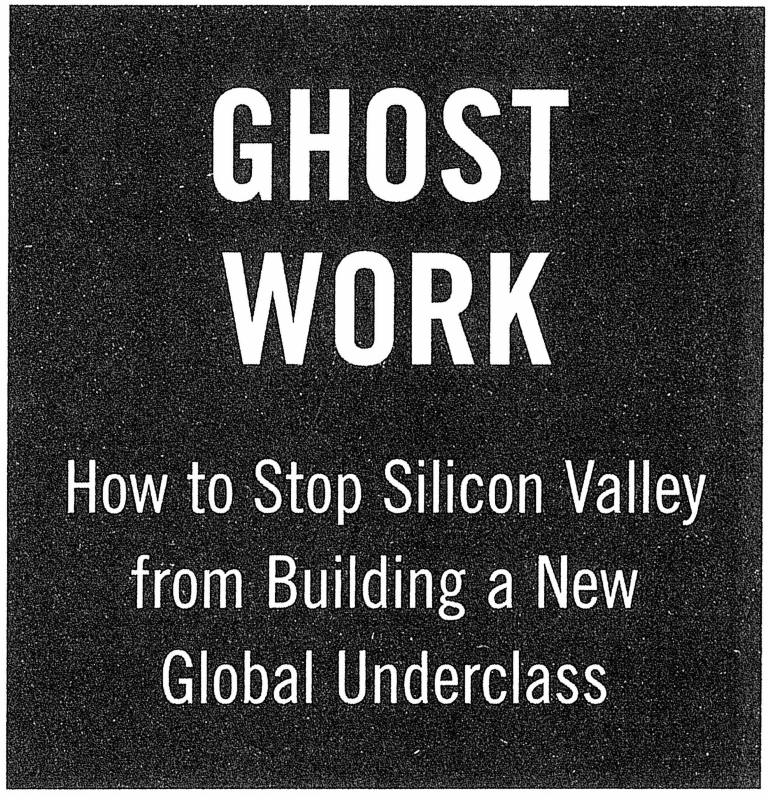

Mary L. Gray and Siddharth Suri

Houghton Mifflin Harcourt
Boston New York
2019

CONTENTS

INTRODUCTION

Ghosts in the Machine

The human labor powering many mobile phone apps, websites, and artificial intelligence systems can be hard to see—in fact, it's often intentionally hidden. We call this opaque world of employment *ghost work*.[1] Think about the last time you searched for something on the web. Maybe you were looking for a trending news topic, an update on your favorite team, or fresh celebrity gossip. Ever wonder why the images and links that the search engine returned didn't contain adult content or completely random results? After all, every business, illicit or legitimate, advertising online would love to have its site ranked higher in your web search. Or think about the last time you scrolled through your Facebook, Instagram, or Twitter feed. How do those sites enforce their no-graphic-violence and no-hate-speech policies? On the internet, anyone can say anything, and, given the chance, people certainly will. So how do we get such a sanitized view? The answer is people and software working together to deliver seemingly automated services to customers like you and me.

Beyond some basic decisions, today's artificial intelligence can't function without humans in the loop. Whether it's delivering a relevant newsfeed or carrying out a complicated texted-in pizza order, when the artificial intelligence (AI) trips up or can't finish the job, thousands of businesses call on people to quietly complete the project. This new digital assembly line aggregates the collective input of distributed workers, ships pieces of projects rather than products, and operates across a host

of economic sectors at all times of the day and night. In fact, the rise of this shadow workforce is part of a larger, more profound reorganization of employment itself. This yet-to-be-classified form of employment done on demand is neither inherently good nor bad. But left without definition and veiled from consumers who benefit from it, these jobs can easily slip into ghost work.

Businesses can collect projects from thousands of workers, paid by the task. Now they can depend on internet access, cloud computing, sophisticated databases, and the engineering technique of human computation — people working in concert with AIs — to loop humans into completing projects that are otherwise beyond the ability of software alone. This fusion of code and human smarts is growing fast. According to the Pew Research Center's 2016 report *Gig Work, Online Selling and Home Sharing,* roughly 20 million U.S. adults earned money completing tasks distributed on demand the previous year.[2] Professional, white-collar information service work, delivered through on-demand work platforms, is already projected to add $2.7 trillion, or 2.0 percent, to global GDP by 2025.[3] If trends continue at the current rate, economists estimate that by the early 2030s, tech innovation could dismantle and semi-automate roughly 38 percent of jobs in the U.S. alone.[4] Left unchecked, the combination of ghost work's opaque employment practices and the shibboleth of an all-powerful artificial intelligence could render the labor of hundreds of millions of people invisible.

Who does this kind of work? People like Joan and Kala.

Joan works from the Houston home she shares with her 81-year-old mother. In 2012, Joan moved in to care for her mother after a knee surgery left her mom too frail to live on her own. A year later, Joan started picking up work online through MTurk — short for "Amazon Mechanical Turk," a sprawling marketplace owned and operated by tech giant Amazon.com. Joan makes some of her best money doing "dollars for dick pics." That's how she describes labeling pictures flagged as "offensive" by social media users on platforms like Twitter and Match.com.

Companies can't automatically process every piece of content users

flag for review, so some of the harder-to-evaluate materials are routed to workers like Joan. On the surface, her task seems simple: click on pictures and assess their content. Is that an X-rated penis selfie that should be removed, or some innocuous G-rated body part? She is paid for each task she completes and decides when she walks away from her computer. Joan, with years of practice, now knows how to piece together an average ten-hour day that will bring in roughly $40* worth of such tasks.

Thousands of miles away in Bangalore, India, Kala works from her makeshift home office, tucked away in the corner of her bedroom.[5] Joan and Kala do similar tasks, sorting and tagging words and images for internet companies, but Kala picks up work from an outsourcing company that supplies staff to the Universal Human Relevance System (UHRS), an MTurk-like platform used internally by its builder, Microsoft. Kala, a 43-year-old housewife and mother of two with a bachelor's degree in electrical engineering, calls her two teenage sons into the room, points to a word displayed inside a large text box on her LED monitor, and asks them, "Do you know what this word means? Is it something you shouldn't say?" They giggle as she reads the text out loud to them. They make fun of her pronunciation of "chick flick." Together they decide that, no, this sentence does not contain adult content. Kala clicks "no" on the screen, and the window refreshes with a new text phrase to read to her sons. "They are more qualified to recognize these words than me," she says, laughing. "They help me keep the internet clean and safe for other families." Though she's typically unable to find enough tasks to fill more than 15 hours of work in a given week, Kala returns to UHRS almost every day to see if there are any new tasks that she feels qualified to do. Kala's doggedness and luck in the past have paid off. Now that she's learned how to browse and claim tasks quickly, Kala can make the time she has between making meals and checking her children's homework feel, as she puts it, "fruitful" as she does web research for what she considers extra income.

---

* Throughout this book, all dollar amounts are in U.S. dollars. Rupee amounts refer to the Indian national currency in current conversion rates.

Content moderation—from sifting through newsfeeds and search results to adjudicating disputes over appropriate content to help technology and media companies figure out what to leave up or take down—is just one example of a new type of work that depends on people like Joan and Kala. Reviewing content is a common, often time-sensitive task generated in the wake of social media companies' attempts to identify family-friendly materials for the billions of people who use their sites every day. There are way too many webpages, photos, and tweets in every imaginable language for people like Joan and Kala to assess them all.

Companies like Google, Microsoft, Facebook, and Twitter use software to automatically remove as much "not safe for work" content as they can, wherever possible. But these software filtering systems, powered by machine learning and artificial intelligence, aren't perfect. They can't always tell the difference between a thumb and a penis, let alone hate speech and sarcasm. Remember that classic moment in the 2012 U.S. presidential campaign when Republican candidate Mitt Romney uttered the phrase "binders full of women!"? Twitter needed workers, doing the same type of work that Joan does, to figure out, in real time, why a hashtag attached to such an obtuse phrase was quickly soaring to the top of its trending topics. Was it a hack? A glitch? Bona fide, frenetic Twitter use? Current AI systems can't reliably tell the difference. On-demand work offers the promise of blending the power of computation with the creativity and dynamism of human insight.

This book is the story of Joan, Kala, and the millions of workers like them who step in when AI falls short. They are the humans behind the seemingly automated systems that we all take for granted. But modern AI systems don't just need humans to answer an unfamiliar or challenging question; they also need humans to help them learn how to answer anything in the first place. For example, do an image search for "camelback couch" and you'll get a whole bunch of pictures of couches with curved backs. Search engines like Bing and Google don't see or understand images in the way we humans do. Furniture aficionados need no more than a second to recognize a swank piece of furniture with a curved back

that multiple people can sit on as a camelback couch. The AI systems behind search engines must start with at least a few hundred images of curve-backed couches, each labeled "camelback couch." Then, when the search engine encounters a new picture of a couch, it runs what is called a "classification algorithm," which essentially checks to see if the couch in this new image matches the geometrical patterns of those labeled "camelback" more than those not labeled "camelback." Now, where did the initial set of labeled images, called training data, come from? From people like Justin. With no more than a two-sentence task description as guidance, workers like Justin must claim a job within seconds or lose it to someone else willing to scoop up the job first. Justin's a stay-at-home dad with two young sons, working around his kids' preschool and nap schedules. He readily admits he had no idea what a camelback couch was at the start. "I had to spend an enormous amount of time on Google trying to look up these terms to figure out what they meant before I could answer the questions."

TripAdvisor, Match.com, Google, Twitter, Facebook, and Microsoft are some of the better-known businesses that generate an array of projects that people like Justin are paid to do, task by task, 24 hours a day, seven days a week. New companies crop up every day with business models that depend on workers around the world who respond to open calls routed through software to do this behind-the-scenes work. Businesses that can contract out their day-to-day activities to independent workers instead of regular employees can use ghost work to answer a web-based customer chat query, edit a product review, or do just about any task that doesn't require an employee's full-time, physical presence.

How Does Ghost Work Work?

A computer program is no more than a list of instructions that tell a computer what to do. When two software programs (or a piece of software and a piece of hardware) need to communicate, they must first establish a

common language. They do so via an application programming interface, or API. The API determines the common language by defining the list of instructions that a program will accept and what will happen after each instruction is executed. One could say that the API specifies the computer program's "rules of engagement." For example, there are hundreds if not thousands of different kinds of computers on the market right now, so writing a custom version of a software system for each type would be impossibly complex. But when all (or at least significant fractions) of the machines available obey the same API, programmers can write code once for all of these kinds of machines, because the API ensures that all of the machines understand the same language. These types of APIs are limited to what a computer can do, but the MTurk API enabled software developers to write programs, using only a slightly different set of instructions, that automatically pay *humans* to do tasks.[6]

Normally, when a programmer wants to compute something, they interact with a CPU through an API defined by an operating system. But when a programmer uses ghost work to complete a task, they interact with a person working with them through the on-demand labor platform's API.[7] The programmer issues a task to a human and relies on the person's creative capacity — and availability — to answer the call. Unlike CPUs, humans have agency: they make their own decisions. While CPUs just execute whatever instruction they are given, humans make spontaneous, creative decisions and bring their own interpretations to the mix. And they have needs, motivations, and biases beyond the moment of engagement with the API. Given the same input, a CPU will always output the same thing. On the other hand, if you send a hungry human into a grocery store, he or she will walk out with a dramatically different bag of groceries than if they were not hungry. In exchange for this impetuousness and spontaneity, humans bring something to work that CPUs lack: creativity and innovation. Joan, Kala, and Justin are members of a growing economy, hidden by APIs and fueled by ghost work.

Less than two decades ago, software developers only wrote code for computers to execute. The MTurk API, and those that followed, allowed

programmers to use humans to do tasks that are beyond a computer's capacity, like accurately making a quick judgment call, as Kala and Joan do when they determine what is and isn't adult content. In fact, anyone sitting in front of a web browser could now answer an automated request for help. Businesses call this mix of APIs, rote computation, and human ingenuity "crowdsourcing," "microwork," or "crowdwork." Computer scientists call it "human computation." Any project that can be broken down into a series of discrete tasks can be solved using human computation. Software can use these APIs to manage the workflow and process the output of computers and individuals and even pay people for their contributions once they have completed the task. These people power modern AI systems, websites, and apps that we all use and take for granted.

Imagine a woman in her early twenties—let's call her Emily—standing on a curb in Chicago. Emily opens the Uber app on her smartphone and an Uber driver responds. Neither Emily nor the driver knows that their meeting hinges on another woman, two oceans away—perhaps her name is Ayesha.[8]

Emily and her driver have no idea that Uber's software just flagged his account. The driver—let's say his name is Sam—shaved off his beard last night for his girlfriend's birthday. Now the selfie he took this morning—part of Uber's Real-Time ID Check, rolled out in 2016 to authenticate drivers—doesn't match his photo ID on record. It didn't occur to Sam that a discrepancy between the two photos—one showing him with a beard, one without—would automatically suspend his account. But suddenly, and unbeknownst to him, his livelihood hangs in the balance.

Meanwhile, overseas in Hyderabad, the Silicon Valley of India, Ayesha sits at her kitchen table, squinting at her laptop. She just accepted a job routed from Uber to CrowdFlower's software, and now she is an invisible yet integral part of the ride. CrowdFlower and its competitors with similarly hip-techy names, like CloudFactory, Playment, and Clickworker, offer their platform's software as a service to anyone who needs quick ac-

cess to a ready crowd of workers. Tens of thousands of people like Ayesha log on to crowdsourcing platforms like CrowdFlower every day, looking for task-based work. Now Ayesha — and any other invisible workers who happen to have responded to CrowdFlower's request — will determine whether Sam picks up Emily.

Uber and CrowdFlower are two links in a growing supply chain of services that use APIs and human computation to put people to work. Uber uses CrowdFlower's API to pay someone to review the results of Ayesha's work, and, if it passes muster, it will process Uber's payment to her within minutes. If it doesn't meet the preprogrammed bar, Ayesha won't get paid for her efforts, nor will she have any meaningful opportunity to lodge a complaint. The API isn't designed to listen to Ayesha.

Ayesha compares the two photos of the driver side by side. A timer in the top right-hand corner of CrowdFlower's webpage winds down, prompting her to speed up. If she doesn't submit a response before the timer runs out, CrowdFlower won't process Uber's payment for the task. Ayesha blinks, glances at the timer, and squints at the thumbnail-size photos: *Yes, those are the same brown eyes. The same dimpled cheeks.* She clicks "okay."

Sam's account is authorized to pick up Emily just as he pulls up to the curb. Emily stops scanning the congested Chicago traffic and climbs into his car. By the time the car door closes, Ayesha has moved on to the next task. She hopes to net a few more rupees before she ends her workday.

Neither Uber's passengers nor their drivers realize that a person, working far away or perhaps just down the road, might vet their transaction in real time. Imperceptible exchanges like this one determine one out of every 100 Uber pickups in the United States, which means they happen roughly 13,000 times a day. We never saw the ghost work that Ayesha could do for CrowdFlower, but, having spent time with her and workers like her, we can imagine the fleeting market exchanges that consumers like Emily and drivers like Sam will never see. Ayesha is the only artifact of ghost work's presence and, as such, the only one who can help us recover the experience of ghost work after Emily and Sam are long gone.

• • •

Billions of people consume website content, search engine queries, tweets, posts, and mobile-app-enabled services every day. They assume that their purchases are made possible by the magic of technology alone. But, in reality, they are being served by an international staff, quietly laboring in the background. These jobs, dominated by freelance and contingent work arrangements rather than full-time or even hourly wage positions, have no established, legal status. Sometimes these jobs are given heft as harbingers of the "Second Machine Age" or the "Fourth Industrial Revolution" or part of a larger digital or platform economy. Other times, they're simply, glibly called *gigs*.[9]

No employment laws capture the on-demand gig economy's odd mix of independence from any single employer and dependency on a web-based platform. As the taskmasters of the gig economy, on-demand platforms make their money by matching those buying and selling human labor online, generating a two-sided market of myriad businesses and anonymous crowds of workers. And, importantly, as media scholar and sociologist Tarleton Gillespie points out, platforms may not create the content that they host, "but they do make important choices about it."[10] On-demand work platforms can easily become silent business partners more aligned with the interests of those willing to pay a fee to find workers than with the workers searching for jobs.

From the largest firms to the smallest startups, companies rely on this shared pool of on-demand workers amassed by on-demand platforms. They use this assembly of workers to satisfy customers who have grown to expect responses to their requests within seconds. Businesses turn to this pool, instead of traditional temporary staffing agencies, to fill last-minute gaps on their teams. They draw from it to spin up new projects, from testing a new software privacy setting to vetting descriptions of culturally attuned mac-and-cheese flavors. Such ventures are too speculative or loosely understood to justify hiring a full-time employee or the expense of recruiting, even through a temp service. No business wants to invest in launching a new service or product without gauging

how consumers will respond. Service industries, driven by the ever-shifting winds of customer taste and satisfaction, can try out ideas generated by ghost work and iterate on responses from other workers, standing in for the average consumer.

Robots Might Be Coming, but They Aren't Here Yet

Every week, another breathless headline proclaims the end of work. Soon, we are warned, the robots will rise up against us. Automation and its handmaiden, artificial intelligence, are widely understood as processes making human labor obsolete. Robotic arms can move sheets of metal across the factory floor. Software bots can take texted pizza orders. Drones can deliver packages to our doorsteps. These intelligent systems, now hitched to many traditional employment sites, are said to herald the rapid disappearance of humans in the workplace. The inevitable triumph of AI, so the story goes, will make all but the most uniquely qualified workers redundant. We all need to skill up. *Now.*

Tesla and SpaceX founder Elon Musk, renowned physicist Stephen Hawking, and Google co-founder Larry Page are just a few of the prominent voices in this chorus.[11] Either they express panic about "summoning the demon" of AI or wax nostalgic about a time before AI, when humans supposedly controlled their own destiny.[12] But arresting headlines obscure a messier reality. While it's undeniably true that robots are on the rise, most automated jobs still require humans to work around the clock, often part-time or on a contract basis, fine-tuning and caring for automated processes when the machines get stuck or break down, as technical systems, like humans, are apt to do.

It's also true that the long march toward automation has historically created new needs and different types of human labor to fill those needs. In this respect, the new, software-managed work world shares features of the factory jobs that assembled cars by placing workers on a produc-

tion line where and when they were needed most. It also resembles the so-called piecework that women and children did on farms in the 19th century, assembling matchstick boxes for pennies a pop. And it overlaps in obvious ways with the outsourcing of medical transcription and call center work to the Global South that boomed with the expansion of the internet in the late 1990s.

Factory work, piecework, and outsourcing were all precursors to tasks distributed online insofar as they involved jobs that were small, repetitive, and removed from the bigger picture. These jobs came with little stability or support. They were done, most often, by people whom economists might consider expendable or "low skill." The market calls this, unironically, "human capital." Clicking "dog" or "cat" to label an image that will eventually enable an iPhone to recognize a family pet is not that different from turning a screw on what will eventually become a Ford truck. But that's where the job similarities end.

Blue-collar manufacturing jobs have been the most visible targets of AI's advance. The Foxconn factories that make iPhones allegedly replaced 60,000 humans with robots in 2016. Amazon's 20 fulfillment centers reportedly deployed 45,000 robots to work alongside 230,000 people that same year. Yet these numbers confound how many jobs are *created* by automation. And the media coverage of AI's impact on full-time blue-collar work can distract us from the rapid growth of a new category of human workers to complement or tend to automated manufacturing systems when AI hits its limits.

In the past 20 years, the most profitable companies have slowly transitioned from ones that mass-manufacture durable goods, like furniture and clothing, to businesses that sell services, like healthcare, consumer analytics, and retail. There's more money to be made in selling consumers an experience, from sipping a latte to watching a bit of infotainment, than building a television set.[13] Businesses of all types manage costs by tapping into and maintaining control of a pool of contingent workers.

Having who you want, when you want them, is now a half-century-old strategy for avoiding negotiations with full-time employees and the classification and employment laws that protect them.

This hybrid of humans and AI reconfiguring manufacturing, retail, marketing, and customer service has outstripped familiar employment categories. Unlike the repetitious lockstep of factory-controlled, full-time manufacturing shift work, these task-based services, such as correctly amending a client's tax return or translating and captioning a video in real time, depend on endless iterations of human discernment and divination that don't fit neatly into a traditional 40-hour workweek. The tasks are dynamic, not merely mechanical, which is why it is difficult to eliminate humans from the task at hand.

AI is simply not as smart as most people hope or fear. Take, for example, the celebrated accomplishments of the AI powering AlphaGo, most recently chronicled in technologist Scott Hartley's book *The Fuzzy and the Techie*.[14] In May 2017, AlphaGo became the first computer program to beat Ke Jie, the reigning world champion of the ancient Chinese board game go. Five months later, AlphaGo fell to its progeny, AlphaGo Zero. But, lest we be too impressed, it's important to keep in mind that the rules of go are fixed and fully formalized and it is played in a closed environment where only the two players' actions determine the outcome. AlphaGo and AlphaGo Zero's human programmers at the Google-backed company DeepMind gave the programs clear definitions of winning versus losing. Winning go is about foreseeing the long-term consequences of one's actions as one plays them out against those of an opponent.[15] So AlphaGo was trained on billions of board positions using a large database of games between human experts, as well as games against itself, allowing it to learn what constitutes a better move or a stronger board position.[16] AlphaGo Zero was then steeped in all of those prior experiences by playing against AlphaGo, a mirror image of self. But, as Tom Dietterich, a noted expert in artificial intelligence research, suggests, "we must rely on humans to backfill with their broad

knowledge of the world" to accomplish most day-to-day tasks. Real life is more complicated than a game of go.

The new online work platforms that channel jobs to Joan, Kala, Justin, and Ayesha upend the mediagenic stories about AI's boundless wisdom and the inexorable rise of robots. Real-world tasks, from identifying hate speech or categorizing a rental as a great springtime wedding venue to correctly amending a tax return, require human discernment. Formalizing the singular, best choice, as you might in a game of go, won't work. For example, it would be difficult, if not impossible, to enumerate every attribute of a wedding venue that would make it the "best." Even if this were possible, people would have different preferences when it came to the attributes of the venue. Moreover, the training data to teach AI to recognize what counts as the "best choice" does not exist. In addition, an endless set of external factors, from vernacular slang and climate-change-induced hurricanes to haphazard tax reform legislation, can intrude and influence the outcome. In many cases, there are too many unknowns to train current AIs to be aware enough or gain enough experience to intelligently respond to all cases of the unexpected. This is why AI must return to humans to backfill decision-making with their broad knowledge of the world.

Anyone who scrutinizes the shadows of AI, as we have done, will find a new world of work in which software manages people doing jobs that computers can't do. As builders create systems to transfer tasks from humans to machines, they surface new problems to solve through automation. For example, it was only after the web became mainstream that companies like Facebook, Twitter, and Instagram faced growing demand to moderate their online content, outstripping the limited capacity of automated moderation tools. At the same time, as novel systems are brought online, they typically face unanticipated problems and fall short of their promise, hence the need for Kala's and Joan's work. Thanks to workers like them, automated moderation software is better, but it is far from perfect. The inevitable glitches that automated processes encounter along

the way to perfection generate temporary work for people. Once they have successfully trained artificial intelligence to perform like humans, workers move on to the next tasks engineers assign them that push the boundaries of automation. Since the finish line moves as people dream of new applications for AI, we can't be sure if the "last mile" of the journey toward full automation will ever be completed. We call this the "paradox of automation's last mile."

As AI advances, it creates temporary labor markets for unforeseen and unpredictable types of tasks.[17] The great paradox of automation is that the desire to *eliminate* human labor always *generates* new tasks for humans. What we call "the last mile" is *the gap between what a person can do and what a computer can do.* Without a doubt, software developers will use ghost work to perform the tasks at hand and push AI to its limits. And it is just as likely that as more companies aspire to give us AI-enabled "smart" digital assistants to manage our calendars and book our flights, we'll need more and more people to step in when AI falls short of our increasingly exacting and extensive demands. In fact, dependency on temporary human labor has always been a part of the history of technology's long march toward automation. Today's engineers aiming to solve problems through algorithms and AI are the latest iteration of the paradox of automation's last mile. On this frontier, the peaks and valleys of temporary work shift constantly, redefining relationships between humans and machines in the process.

The rise of on-demand labor platforms signals the allure of using APIs to organize, route, and schedule work. As the examples in this book suggest, this reorientation to use contingent labor to develop new technologies fueled the recent "AI revolution." When an AI system that powers a phone app or online service isn't confident about what to do next for a customer, it needs human help, and it needs it fast. End users expect software running search engines and social media to respond in milliseconds. Traditional methods of hiring won't do here. So if an AI needs a human in the loop, to make sense of a spike in search terms tied to, say, a sudden natural disaster, it needs to get human input immediately.

The disaster will fade into history. The software will have learned what it needed from the momentary flood of human input. That is exactly what an always-on labor pool, plugged into APIs, provides. Software developers can write code that automatically hires someone to solve an immediate problem, checks their work, and pays them for doing the job. Similarly, scientists and researchers using modern machine learning systems depend on training data that's clear and error-free. They need an automated method to get help generating and cleaning up that data, and they rely on many people around the world to do it. On-demand labor platforms offer today's online businesses a combination of human labor and AI, creating a massive, hidden pool of people available for ghost work. Delivering services and jobs on demand could be an integral part of the future of work. It could also have unintended, potentially disastrous consequences if not designed and managed with care and attention to how it is restructuring the experience and meaning that people attach to their day jobs.

Ghost Work and the Future of Employment

The dismantling of employment is a deep, fundamental transformation of the nature of work. Traditional full-time employment is no longer the rule in the United States. It used to be that a worker could spend decades showing up day after day to the same office, building a career, with the expectation of getting steady pay, healthcare, sick leave, and retirement benefits in return. Now, centuries of global reforms, from child labor laws to workplace safety guidelines, are being unraveled. In fact, according to the U.S. Department of Labor's Bureau of Labor Statistics, only 52 percent of today's employers sponsor workplace benefits of any kind. In the wake of the Great Recession, Americans have come to realize that the best alternatives to serving food, providing healthcare, or selling goods in brick-and-mortar shops are the growing number of jobs that can be found in the on-demand gig economy. Because this work doesn't fit any ready-

made classification in employment law, the terms-of-service agreements for platforms like MTurk and CrowdFlower are almost indistinguishable from the boilerplate dialogue boxes that we all click to update our software, erasing the protections that traditional workers enjoy.

While the Pew Center's best estimate puts the number of individuals involved in ghost work today at around 20 million, there is no corroborating tally of how many people like Joan, Kala, Justin, and Ayesha cobble together contract-based ghost work gigs to make ends meet. When the Bureau of Labor Statistics added a supplemental survey of Contingent and Alternative Employment Arrangements to the U.S. Census Bureau's May 2017 Current Population Survey (CPS), a monthly snapshot of 60,000 eligible households that provides the nation's employment and unemployment data for the U.S. Bureau of Labor Statistics (BLS), it was the first time it had tried to gauge the growth of contingent jobs in more than a decade.[18] According to the BLS's estimates, 10.1 percent of U.S. workers work without an explicit or implicit long-term employment contract. But this survey counts only people who hold an alternative employment arrangement as their primary or stand-alone job. So if a person does ghost work while also holding down a nine-to-five job with a single employer for a set salary or hourly wage — a very common trend among the most active workers we met — they are even harder to identify, let alone count.

The Bureau of Labor Statistics' 2017 Contingent and Alternative Employment Arrangements supplement to the Current Population Survey poses two hurdles for measuring the rise of ghost work. It is hard to really understand what "long-term employment" means to workers in a multiple-choice survey. It might be as hard to know what "primary job" means when so many people hold down multiple jobs to make their rent. The confusion over how to think about old work categories, like "long-term" or "primary job," is reflected in a head count from the Government Accountability Office that diverges with the BLS's numbers. It reported, just two years earlier, that at least 31 percent of the U.S. workforce claims that it does some form of alternative work arrangement that includes freelancing or independent contract work for hire.[19] Labor economists

Lawrence Katz and Alan Krueger estimate that temporary and alternative contract-driven work delivered through self-employed workers or those temporarily employed by staffing agencies — the so-called casualization of the workforce — rose from 10 to 16 percent, accounting for all net employment growth in the U.S. economy in the past decade.[20] The closest we might come to understanding the size and growth of ghost work comes from independent think tanks rather than governmental data.

The most conservative estimates of on-demand gig labor markets come from the Economic Policy Institute. Economist Lawrence Mishel and his research team estimate that between 0.5 and 1 percent of working adults in the U.S., or 1.25 to 2.5 million people, participate in the on-demand gig economy. But they come to that number through a very specific study of Uber drivers and the assumption that Uber and other ride-hailing mobile apps make up the bulk of gig work. A study produced by the JPMorgan Chase Institute found that 4.3 percent of U.S. adults, or 10.73 million people, had worked an online-platform-economy job at least once between 2015 and 2016.[21] A revolving door of temporary tasks defines this job market. No obvious professional title. No ladder. No bonuses. No guarantees. Tasks are finite, built to disappear once a firm has reached its specific target and the people hired to hit it have moved on to other projects.

From software engineering and legal services to commercial media and healthcare, a wide range of businesses now turn to on-demand labor platforms to convert white-collar careers into bundles of projects. Such all-digital information services and knowledge work convert the creative expertise required to think with and massage data into the consumable services delivered online by industries from tech and law to finance and entertainment. Because of these seismic shifts, the days of large enterprises with full-time employees working on-site are numbered. A crowded field of companies compete to sell information services that pair computers and smart devices with artificial intelligence. Companies like Catalant (formerly HourlyNerd), Popexpert, and Upwork use APIs to deliver the larger "macro-tasks" of knowledge work, on demand, to other

businesses or individuals. The future of employment wrought by automation will undoubtedly be far more disjointed than traditional nine-to-five work. Some labor economists argue that a new reality of "fissured workplaces" is the ultimate result of turning long-term employment into a series of short-term contracts throughout the 1980s and '90s.[22] And yet this newly unpredictable reality hasn't dissuaded millions of digital workers around the world from sitting down at their keyboards day and night and performing the countless behind-the-scenes tasks that make our apps seem smarter than they are. This means that the future of business and employment will more likely resemble today's on-demand economy than a dystopian sci-fi film in which humans disappear and robots rule. It will require people to navigate layers of software interfaces and learn to labor in the shadow of AI. It will contain an ecosystem of independent contractors like Joan, typing away in spare bedrooms, cafés, and cinder-block homes in rural India, Knoxville, Tennessee, and Portland, Oregon — or anywhere else a person with an internet connection, a computer, ambition, or financial need can get online. When little attention is paid to the workers behind these jobs, on-demand labor can quickly become alienating, debasing, precarious, and isolating ghost work.

All of the workers we interviewed have something unexpected in common: hope. They *hope* to use on-demand jobs to control when they work, who they work with, and what tasks they take on. They *hope* to stay close to their families. They *hope* to avoid long commutes and hostile work environments. And they *hope* to gain experience that refreshes their résumé or opens a door to new possibilities. Also true is that many saw few other options for themselves or their families. Full-time employment in their towns often meant an hourly wage at a big-box store, working a fixed shift, adapting to unpredictable work schedules, and without meaningful opportunities to advance. On-demand jobs gave them real-world experiences scheduling meetings, testing and debugging websites, developing computer expertise, finding sales leads, and managing full-time employees' HR files. What worker doesn't hope to one day fully control both the schedule and the purpose of their workdays?

Ghost Work draws on a five-year study in which we — an anthropologist and a computer scientist and the research team we mustered — investigated this booming yet still largely hidden sector of the economy.[23] It is the culmination of more than 200 interviews and tens of thousands of survey responses collected from workers across the United States and India; dozens of behavioral experiments and social network analyses of on-demand work platforms; and unique studies of this labor market's other key players, namely the people turning platforms into businesses and those hiring workers on them. It exposes a world in which steady work and salaries are being replaced by a chaotic string of small projects and micropayments, and human bosses are being replaced by automated processes that are programmed to oversee a far-flung workforce of anonymous independent contractors. *Ghost Work* departs from the well-known story about the rise of robots by documenting a more complicated future that is already emerging. It shows how ghost work platforms foster our belief in the magical promise of technology.

As an anthropologist, Mary had her interest sparked by the specter of an atomized world of workers earning money by sorting and annotating thousands of pictures of pointy-eared dogs, hairless cats, and "dick pics." When Mary asked those hiring workers what they knew about the people picking up their tasks, the responses ranged from "I don't know" to "Why would I want to know that!?" As a computer scientist, Siddharth had used on-demand platforms for years to conduct online behavioral experiments, but he knew little about the workers, as the API kept them hidden from him.[24] Who were the people offering themselves up for hire? What motivated them to do what many consider "mindless tasks," and how did they make this ill-defined form of employment pay off? What did this work mean to them? How many tasks flow online through these on-demand platforms? What are the business models that produce the demand for task-based work? What are the overall workings of this task-based economy?

When our research team started asking these questions in 2013, the only people in the conversation were economists, computer scientists,

and businesspeople. All three groups evaluated the on-demand labor market on the basis of its ability to enhance efficiency and maximize a company's bottom line. When humans did happen to come up in the discussion, it was in reference to the consumer. What was the quality of the consumer's experience? The engineers and computer scientists building APIs, for companies or for their own experiments to advance AI, wanted to design systems that eliminated what they assumed were costly, superfluous operations that annoyed end users. They were in the business of building smarter, faster software that could automatically match people to services, whether it was a ride, a meal, or tax advice, with an end goal of using the data from each iteration to train future software to automate even more. Few people were tracking what this approach to productivity would mean for the people who vied to do task-based work for hire. They operated from the assumption that the workers needed to generate training data and improve software would disappear once the AI got things right. Companies were building software, after all, not temp jobs.

For the next five years, we did something our respective research fields had not: we learned about the range of ghost work and the lives of people doing it by conducting one of the most comprehensive studies of its kind. *Ghost Work* is the first book to illuminate ghost work's role in building artificial intelligence and the lives of workers who are invisible yet central to the functioning of the internet and the future of automation. It offers an intimate, detailed look at the experience of workers in this new economy. We focus on workers living in India and the United States, the two countries with the largest on-demand labor pools, both with a long, entwined history of technological advancement. Our team interviewed and observed hundreds of people, in their homes and other makeshift workspaces, as they did everything from flag tweets to transcribe doctors' visits. We surveyed thousands more to establish a baseline to help us gauge which practices were typical and which were exceptional. We then scaled up the findings from our interview data by conducting dozens of behavioral experiments and "big data"–style analyses, each with thousands of participants. Throughout *Ghost Work,* the reader will see

us toggle between these two types of analysis, combining their strengths to shed more light on those who work in the on-demand economy.

We examined four different ghost work platforms: Amazon.com's Mechanical Turk (MTurk); Microsoft's internal Universal Human Relevance System (UHRS); the socially minded startup LeadGenius; and Amara.org, a nonprofit site dedicated to translating and captioning content for transnational audiences and people with hearing disabilities. Each of these four platforms offers different products and business models. Investigating them alongside one another helped show us that our observations and conclusions hold broadly across the on-demand economy, as opposed to being specific to one category of ghost work. MTurk, as one of the first commercially available ghost work platforms, set the norms for how others would apply human computation to business solutions. UHRS stands in for the internal platforms that every large tech company maintains to meet its own ghost work demands. LeadGenius and Amara illustrate just how complex and sophisticated ghost work can be, as well as how much companies can play a role in designing better conditions for ghost work.

And then there were the workers. Among those working on these platforms, we met people stringing together on-demand projects to re-create the work hours, pay rates, and career development associated with full-time employment. We also met college-educated, stay-at-home parents staving off boredom; first-generation college students working 50 hours a week to save money for a wedding or fund a younger sibling's degree; and people, disabled or retired, looking for alternative routes to employment or extra money to pad their social security checks. We also met engineers and entrepreneurs who founded, designed, and built ghost work platforms.

When we started, we wondered: Who are these people, and how does their work differ from traditional nine-to-five jobs? On many on-demand labor platforms, a requester like Siddharth sees no personal information about a worker—gender, location, age, and prior work experience are all unknown. And workers have no information about the requester beyond

the task description. The range of tasks can be endless and can change from one day to the next. APIs can be used to have a human tag a cat photo or run a research experiment, and similar APIs can be used to hire someone to deliver a meal, send a car, or design a website. The moment that the API is called and the work is produced looks automated to both consumers and requesters. But who benefits from this veneer of automation? And who might be harmed?

By the time we finished our study, we understood that people doing ghost work were no different from our friends and family making a living through freelance writing, research, software development, or adjunct teaching. Their work lives were often vulnerable and insecure. Yet the anonymity and remote access of on-demand platforms also made it easier for those marginalized in formal employment—because of where they lived, a perceived disability, or their belonging to a stigmatized minority—to earn an income.

The more closely we looked at the nascent edges of on-demand work, the more we saw people using familiar strategies to stay afloat and create meaningful employment for themselves and their peers. Sometimes these workers succeed by collaborating with one another. They share strategies for making difficult tasks easier, they swap intel about those with tasks for sale, and they help one another stay awake as they wait for new tasks to come online. We met workers who learned to move forward after their failed forays. Who learned to thwart exploitative business models, labor laws, and APIs designed to be indifferent to their interests. And we noted that businesses have no clue how much they profit from the presence of workers' networks. This book describes the thoughtless processing of human effort through APIs as *algorithmic cruelty*—literally, computation incapable of thought, let alone empathy. People doing ghost work understand the perils and potential of on-demand work better than any engineer, tech company CEO, policy maker, or labor advocate. They live it every day. And they are the most invested—economically and psychologically—in making it better.

Just as we need companies to be accountable for the labor practices

that produce our food, clothes, and computers, so should the producers of digital content be accountable to their consumers and workers. We should demand truth in advertising in cases where humans have been brought in to benefit us—whether it is to curate our news or field complaints about what some troll just posted to our favorite social media site.

Along with a call for transparency, *Ghost Work* holds lessons for tech entrepreneurs who want a productive workforce, engineers who are building the labor platforms of the future, and policy makers charged with shaping this new commercial landscape. But the still untold story of the invisible workers who power the apps on our phones and the websites we look at should interest a wide range of general readers who've seen some coverage of "gigging it" or "Turk work," not to mention "crowdsourcing" and "microwork," and heard *a lot* about the rise of robots but want a deeper look at how, exactly, AI reshapes the working world and what, precisely, people do in the shadow of it. We offer a textured, nuanced, and ultimately hopeful account. Among other things, we show how moving beyond the full-time-freelance divide alone could go a long way toward sharing the wealth generated by the internet with those tasked to grapple with the paradox of automation's last mile. We hope, too, that the lessons we learned from the many workers we interviewed in the U.S. and India will help the millions of people who already, or will soon, do this work make the most of it. More than anything, *Ghost Work* is for anyone who works and wants to see what their future holds.

4

Working Hard for (More Than) the Money

Sizing Up the Options

Given how hard it is to find one's footing, let alone paychecks, doing on-demand ghost work, why would someone choose to do it at all?

As anyone whose air conditioner conks out in the middle of a sweltering heat wave can attest, sometimes there is no "choice" when life requires taking on extra work to pay one's bills. The Federal Reserve Board's annual *Report on the Economic Well-Being of U.S. Households* found, in 2016, that 40 percent of people in the United States did not have the means to cover a $400 emergency expense without borrowing money or selling something.[1] Signing up for an account and working from a home computer was, for some workers, the quickest route to fast money when they needed it most. They felt they had no other options.

But wouldn't working at the local mall or a fast food restaurant chain be better than ghost work? It depends on how one defines "better." Stable, decent-paying service sector jobs are not as easy to come by as a reader might imagine. And for those people experimenting with or committed to ghost work, the decision to keep doing ghost work, once they made it past the immediate need for emergency cash, is complicated.

Once workers met basic needs, they stuck with ghost work for reasons that were about more than the money. Those people did ghost work because they felt that it offered an escape route, or at least temporary relief,

from the pressures and hurdles they had come to associate with a more typical day job.

Day jobs come with a mix of constraints and cultural cachet. Flipping burgers as a teenager to save money for a first car earns a pat on the back for being "industrious." Committing to that same job later in life does not offer the same validation or legitimacy, even though the paycheck is necessary and hard-won. Culturally speaking, taking an unpaid or low-paying job to build one's portfolio of experiences or to get a toehold on a career ladder as a writer, designer, or coder is validated as "entrepreneurial." Such effort is deemed worth the risk of a small paycheck, a worthy investment in one's future, particularly if the glamour of high tech is associated with it.[2]

One of the challenges for those doing ghost work is that there's no agreement about the social status or baggage that comes with it. Is it a dead-end trap, no different from the piecework of the first decades of the last century, or a hip gig that gives someone the ultimate flexibility? Is it better or worse than a "regular" job? People who've decided to pursue ghost work presumably did so after weighing the costs and benefits. They decided, at least for the immediate future, that ghost work was a better option. Their decisions hinged on both what they valued more than money and on taking stock of what "regular jobs" look like in their lives. Their job prospects reflect the growing and sobering reality of what is available to working-age adults around the globe.

The majority of the workers we met, in both the United States and India, are unemployed or underemployed at a moment in history when the vast majority of global job growth, as noted in the introduction of this book, is in food services, retail, construction, home care, and other service sector employment. Even in more professional careers, companies routinely start all but the most senior executive employees out on contracts, with some possibility of staying on but with no promises—from either the employer or the worker. In this way, employers have removed the lower to middle rungs of the career ladder and replaced them with temp work.

If plan A is a dream — the kind of 20th-century, salaried career track that's become less widely available — and plan B is the more widely available option of entry-level contract work, most likely a service sector job with low wages, few perks, no career trajectory, and unpredictable hours, then ghost work's design presents plan C. The premise of ghost work is that it needs people immediately available, willing, and able to answer or evaluate something that a computational process can't address on its own. In the absence of set hours, work sites, and professional gatekeeping, ghost work operates more like a self-organizing, organic online community. People are, in principle, invited to come and go as they please, rather than commit to a structured form of employment that tightly controls schedules, projects, and co-workers. And the system banks on redundancy — if enough people take a swing at a problem, the majority will signal the best probable answer to move the algorithms forward. That means that a person can earn money contributing to a ghost work's ecosystem, whether they put in four hours a week or 40, from one week to the next.

In the wake of this "open call" design — or chaotic mayhem, depending on the platform and the workers' level of experience — people use ghost work to gain some relief from the familiar pressures that dog traditional employment. They nimbly fit paid ghost work into their lives instead of forcing their lives into a regular day job. And some have kept at it, turning it into their main source of income, because it gave them some semblance of control over their time, work environment, and what they took on and valued as "meaningful work" to them.

In many cases, the context of India or the United States made little difference in shaping workers' reasons for entering the ghost workforce. The desire to control one's destiny and to be a part of a contemporary professional working world is a global, middle-class aspiration, after all. As this chapter illustrates, people found myriad, sometime idiosyncratic, ways to make ghost work meaningful and materially useful to them. They leave us clues about how to convert the shadow economy of ghost work into legitimately valued on-demand employment.

When Career Ladders Lost Their Rungs

The picture many people hold about what a traditional job looks like — in terms of stability and predictability — is a product of the latter half of the 20th century. As noted earlier, not until World War II did organized labor and political clout combine (at least in some parts of the United States) to create full-time employment, meaning jobs that came with not just a paycheck but also stable hours, pensions, healthcare, and workplace safety.

Those jobs led to the growth of a middle class that had hit its zenith in the United States by the late 1970s. In the decades that followed, the middle class was hollowed out by deindustrialization and outsourcing.[3] What was left behind was the burgeoning growth of service jobs. This new form of employment rose from the thousands of retail chains, fast food outlets, and chain big-box stores that filled, first, American malls and suburbs and, not long after, their global equivalents. But service jobs weren't designed to replace the stable salaries and lifelong careers anchored to Cold War–era full-time work. Without the will among the business class to split profits with service industry employees or the strength of organized labor to push for the same safety nets put in place for manufacturing, service work arrived with low pay, uncertain schedules, long commutes from affordable housing, and a new set of customer service demands.[4] Working with the public was now a part of the job, too.[5]

As sociologist Gina Neff argues, by the beginning of the dot-com bubble, in the early 1990s, a generation of college-educated young people, particularly white men, faced a crowded job market made even more competitive by the GI Bill, post–Jim Crow, and second-wave feminism. More qualified applicants vied for a slowly draining pool of professional opportunities. But, as Neff points out, the meaning of "success" was also changing. Now "making it" came to be defined not by how far someone climbed up the corporate ladder and stayed around to earn a top pension but by how much someone set their own hours, drew stock option offers, won competitive bids for their labor on contract, or landed all three.[6] By

the late 1990s and early 2000s, college-educated white-collar workers were throwing themselves into "venture labor"—a new world of high-risk, high-reward job opportunity associated with the tech companies of Silicon Valley and the stock options they hand out. Here success meant either cashing out early or, at the very least, controlling three things: when one worked, with whom one worked, and what kind of work one took on.

Generation X and millennial workers entered a job market that no longer offered the security of full-time employment with benefits familiar to their blue- or white-collar working parents. At the same time, their slightly older peers, at least the successful ones, now defined success as controlling their workloads or no longer needing to work at all. Demand for some full-time employees rallied back; by the mid-2000s, few were offered the well-paying, stable jobs familiar to a Gen Xer's parents. And by then, those with the most education or financial means no longer wanted jobs that anchored them to a timesheet or projects that someone else chose for them.

For those people with less education and wealth, having barely survived the global Great Recession of 2008, ghost work was a lifeline. They and their families worked multiple jobs, making distinctions between ghost work as a "primary" or "secondary" occupation meaningless. It was another source of income that they pulled together to cover their needs. Ghost work allowed them to escape from the inevitability of full-time service work.

WHY PICK GHOST WORK OVER PLAN B?

Why are a growing number of people picking up on-demand gig work online instead of searching for some plan B that will pay the bills?

Let's start by stating the obvious reason for this. Despite reports of job growth, many workers can't turn entry-level plan B service jobs into viable stand-alone options. As noted earlier, many full-time service sec-

tor jobs don't offer wages, schedules, and locations that make them a "better choice" over ghost work. Consider the typical paycheck. Most jobs are mired in wage stagnation. Factoring in inflation, real wages in the United States were only 10 percent more in 2017 than they were in 1973, putting annual wage growth at a glacial pace of 0.2 percent a year over the past 40 years.[7] And the only reason that number isn't lower is that it's skewed by the wage spike among the very wealthiest wage earners, like the CEOs and Wall Street financiers. The top 1 percent of wage earners have seen their annual pay increase 138 percent since between 1979 and 2013, while the bottom 90 percent of workers saw only a 15 percent increase in their annual pay over the same period.[8] This means that the typical full-time job can't offer enough to be the sole source of income.

According to a 2018 report from the National Low Income Housing Coalition, there is no state, metropolitan area, or county where a worker earning that state's prevailing state minimum wage or federal minimum wage can afford to rent a two-bedroom home for their family working a standard 40-hour week.[9] A worker in Alabama, one of the states with the lowest cost of living, would need to make $14.65 an hour to rent a two-bedroom apartment. The state's minimum wage is half that: $7.25. At that wage, a worker would have to spend 81 hours a week to cover their rent. In fact, ironically, the typical service sector "plan B" job doesn't just pay too little — it also demands too much, namely, control over most of a worker's waking hours.

One in six people employed full-time have to contend with irregular work schedules. Ten percent of workers employed full- or part-time get their work schedules less than a week in advance.[10] Employees are sent their work shift updates via email, text, or phone call. They must be available to work the hours offered them. If an employee cannot rearrange childcare, skip other commitments like school courses or hours at a second job, they are paid only for the hours they can work and not given a chance to make up the hours elsewhere in the schedule. Despite loud

criticisms in 2015 that led Starbucks, Disney, and other large companies to drop this practice, the trend, called "just-in-time" scheduling, remains common among larger retail and hospitality employers.[11]

As discussed in the first chapter, those more experienced at ghost work, once they've oriented to their platforms of choice and mastered their work routines, can earn hourly wages comparable to those of plan B traditional employment. It also allows them to avoid just-in-time scheduling or commutes to service-entry jobs that would compete with other constraints on their time.

So what, other than financial compensation, drives on-demand workers to take on on-demand jobs? Many of us might respond that we keep our day job, whether we like it or not, because we must earn money to pay the bills. Not surprisingly, most on-demand workers reported that "earning money" was the main reason that they work, too.[12] But how important is that money to them?

Throughout this chapter, we will use our interview data to show workers' motivations, which we augment with findings from our 1,729 surveys of workers across the four different platforms we studied. Combining these two data sets allows us to see how individual experiences "scale up" to the population level, suggesting something endemic to ghost work. Among the four platforms we studied, between 46 and 71 percent of the workers listed earning money as their primary motivation for doing ghost work. On the other hand, between 29 and 54 percent of workers said their primary motivation was self-improvement, such as gaining experience or learning new skills, or reasons of self-determination, such as utilizing their free time or being their own boss. While earning money is important, it's not the only reason workers do ghost work.[13]

According to a 2016 Pew Research Survey, roughly one-quarter of those doing on-demand ghost work reported that the money they earned was "essential" for meeting their basic needs. Another one-quarter said the money was "important." Of those who reported that the money was either essential or important, nearly half reported that they do this work because they have a "need to control their own schedule." Another quar-

ter said there was a "lack of other jobs where they live." Those for whom the money was essential were also more likely to come from low-income households, more likely to be nonwhite, and more likely to have not attended college.[14] In fact, as existing research suggests, many workers don't have the financial breathing room to give up trying to make on-demand jobs work for them, because they have no other job options available to them.[15]

Yet even the most cash-strapped on-demand workers view their jobs as a choice, an employment decision that they consciously make for their own personal reasons.[16] Not surprisingly, when you ask people why they do this work, they'll say, "For the money." When pressed further, asked to share other reasons they stick with this work, which clearly offers less stability than a more traditional job, things get interesting.

Workers offered no single, dominating factor for turning to on-demand work. To the contrary, they valued on-demand work for a range of reasons, including the fact that they could pick and choose tasks and that they could stop working once they'd made the money they needed that week. It turns out it's unprecedented for large companies to organize employment this way.

When Work Looks More Like a Book Club

Vilfredo Pareto was a famed 20th-century Italian scholar and a pioneer in the field of microeconomics. In measuring the concentrations and unequal distributions of income and housing access in social settings, Pareto observed that 20 percent of Italy's population owned 80 percent of the land.[17] Pareto's principle is a special case of the more general "power law" distribution used to describe the natural and social phenomenon by which a resource is concentrated in the hands of a few.

Pareto's formulation, the 80/20 rule, has been used to describe phenomena ranging from the distribution of income—the richest 20 percent of the world's population control roughly 80 percent of the world's

income — to software engineering.[18] Microsoft engineers observed that fixing 20 percent of the bugs in a piece of software would take care of 80 percent of the glitches found in that computer program.

Pareto's 80/20 rule is also reflected in social systems. For instance, in a large book club, only a handful of avid readers show up at every meeting having read the book and feeling ready to share their thoughts on its broader meaning. Those are the 20 percent in Pareto's distribution. The remaining 80 percent of the book club contains two subgroups of members: those who show up having read some or most of the book but come primarily for the community, and those who show up wanting to try out the group. This last category of members may or may not stick around for the long haul, and they may or may not have read the book, but they are curious to see if the book club is a good fit for them. All three types of members are necessary for the longevity of a dynamic book club, but the 20 percent who are avid participants keep things steady.

This social dynamic of Pareto's 80/20 rule extends to online communities as well. Consider that most of the changes to Wikipedia are done by a small percentage of its editors. Or how, when you post an update to your Facebook newsfeed, a large percentage of your friends likely see the post but only a fraction will comment. The casualness of deciding when we opt in or opt out is what makes these communities work. Imagine if, in order to participate in Facebook, you had to comment on 100 percent of your friends' posts. Chances are a lot fewer people would be on Facebook.

When you think about choices and participation, it's only a small leap to see how the Pareto distribution applies to ghost work. But it helps to first see how it is incompatible with traditional full-time employment. With a traditional job, employers expect that workers will show up for the hours set for them and participate in the work fully for their entire shift. There is not a lot of choice. Workers know the terms and organize the rest of their lives around the hours they've been told to be at work. In exchange, companies give workers paychecks every two weeks. This traditional approach to labor subtracts the contingency — or the casualness — of worker participation.

But ghost work thwarts the traditional job structure. For the most part, there are no set hours, and projects are up for grabs and often assigned on a first-come, first-served basis. In this way, ghost work operates more like a self-organizing community — like a book club or Wikipedia or Facebook — and therefore adheres to a kind of Pareto distribution instead of a structured form of employment.

The Pareto distribution has long been a part of the labor market. Consider freelance writers, day laborers, and actors. A small, tenacious percentage are able to make a sustainable living; a larger percentage struggle to keep afloat, often with other jobs to shore up their effort; and the vast majority of people are testing the waters to see if it's a good fit.

What is unprecedented about ghost work is that large companies have come to rely on it to organize on-demand employment — a community of people with different investments, divergent interests, and diverse offerings, all treated the same and equally valuable to productivity. In the past, companies spent a lot of energy recruiting and retaining the best workers. For the first time, global companies are embracing — or at least unknowingly banking on — the Pareto distribution as a strategy for meeting their labor needs. Companies are populating their workforces by throwing open the front door, inviting everyone in, and then hoping some people stick around long enough to hit a project deadline, but no longer than that.

Ghost work platforms reflect a Pareto distribution in that a core group of the workers do the bulk of the work.[19] The specific percentages of distribution vary, in many ways depending on the platform's approach to retaining workers, but a Pareto distribution exists nonetheless. Ghost work currently organizes around a small percentage of people who turn project-driven tasks into full-time work. A slightly larger portion of people consistently contribute a few hours here and there as their schedules allow. And the majority of people come to the platforms to experiment and may find their way to intermittent or regular work, but they are just as likely to do one or two jobs and leave. All three approaches to ghost work contribute to the platform's bottom line. Even opening an account and having it added to the platform's "head count" — whether a worker

is active or not—generates value for the platform, as it gives the appearance that the platform has a lot of labor on standby for those trying to find workers to fill a project need.[20]

For our purposes, we labeled these three groups *experimentalists, regulars,* and *always-on.* The vast majority of people start out as experimentalists.

Experimentalists are those who come to a platform but leave shortly thereafter, for a variety of reasons, including getting scammed or feeling exploited. Take, for example, Justin, whom we met in the introduction. He lasted no more than a month on MTurk. He learned about the site from his wife, who had friends in graduate school who'd used the site for their research. He describes MTurk as "exploitative" and beneficial only "to people living in places with poor economies." After a short stint, Justin did not go back to the platform.

Justin felt the tasks were exploitative, whereas other experimentalists simply found the platform too difficult to figure out on their own. These sites have a steep learning curve. New workers often struggle to decide which of the thousands of tasks available will be worth their while. Compounding the difficulty is that instructions for some tasks are hard to follow, and, as we detailed in previous chapters, unclear instructions can lead to work being rejected and the worker not getting paid.

"Regulars" are those doing ghost work who have found their footing but, for a range of reasons, work only intermittently. Some come back every few weeks, for a few hours a day. Others reliably come back, but only for a few hours a month of work. Importantly, all of them decide to stay in the mix, making themselves available, as time permits, without making ghost work their main form of income.

Regulars fit ghost work in between other facets of their lives and responsibilities. They might do this work between classes or around the edges of a full-time job. In some cases, workers did a few hours here and there at their full-time jobs, where they had reliable internet access.

Finally, "always-on" workers are those who turned ghost work into

full-time jobs. These are people like Joan, in Houston, who lives with her elderly mother and needs to figure out how to make enough to pay bills and buy groceries. Typically, always-on workers need to control their schedules and have reasons, usually from past job experiences, to feel that ghost work is a better option than the jobs immediately available to them. One common theme we found through interviewing many always-on workers is the importance of having familial and social support to help navigate the complexities of on-demand work.

Just as with book clubs, wikis, and Facebook newsfeeds, all three classifications of participants are necessary to balance the ghost work ecosystem. The 20 percent of workers doing 80 percent of the work guarantee that the work gets done, and the remaining 80 percent of workers doing 20 percent of the work fill in the gaps.

Fitting Work into Life Instead of Life into a Job

The arduous climb into the U.S. middle class, always hamstrung by one's gender, race, educational background, social status, and country of origin, is, statistically speaking, harder than at any point since the Great Depression. So it's not surprising that people turn to ghost work, despite all of its mercurial temperament, because they see something in it that alleviates the pressure of trying to jam their lives into more traditional forms of work, namely service sector jobs.

STUCK AT THE OFFICE: BLOWING UP THE MYTH OF "WORK-LIFE" BALANCE

For some, ghost work is a means of escaping the confines of a cubicle. For others, most notably women, on-demand labor creates a side door into a respectable, legitimizing workplace.

Statistics show that once women earn their own income, a coun-

try's prosperity and health outcomes rise steadily. But, as gender studies scholars note, the past three decades of increased expectations that women *can* "have it all"—a place in formal employment, a family life, and personal well-being—have intensified demands that women *must* do it all, and without additional support. Gender parity in the home is rare and requires government support in the form of paid family leave and affordable childcare.[21] In studying mostly middle-class white women, Arlie Hochschild and, more recently, Melissa Gregg argue that achieving as a "career woman" becomes difficult when one is faced with the double bind of time constraints and expectations that accompany a full-time career and a full-time "second shift" managing and caring for a household.[22] Likewise, we found that women doing on-demand work in the United States and India struggled equally, though in different ways, to juggle demands on their time both at home and in the workplace.

There are striking similarities between the two countries. In India, with the growth of formal employment came a greater demand for women's presence in the service industries, particularly in business process outsourcing.[23] But the country's traditionalist impulses of political, religious, and caste ruling parties splinter cultural interest. India has made room to value the role of modern career women but is less accommodating of women who are financially independent and lay claim to identities beyond "wife," "mother," and "daughter."

While the pressure for women to "have it all" is a global phenomenon, women in the United States and India have different resources to navigate the constraints on their time.[24] Women are still expected to prioritize family and social obligations over their commitments to the job and may not be able to reap the benefits of a professional IT career, such as stable pay, family leave, insurance, and validation as a "career woman."

Asra is small and thin. She often keeps her eyes lowered until she gets to know you, but once she does, she is rarely without a smile. When she laughs, her hand covers her mouth, mirroring the modesty of her hijab. She dresses in full burka when out shopping or running errands in the

crowded streets of the southern city of Hyderabad, home to one of India's largest Muslim Indian populations. She has two young children: a daughter and a son. Her husband is often called away to his medical clinic, serving their bustling Muslim-majority neighborhood.

We met at her house at the height of Ramadan — or Ramazan, as it is called in Urdu-speaking regions of India — for *iftar,* the sunset meal that breaks observing families' daily fast. She set the table with bowls of dates, large plastic bottles of water, and a soup tureen filled with freshly cooked haleem, a thick stew of spiced lamb, lentils, and wheat. We arrived early. We brought two boxes of cookies from Karachi's, a local bakery. She approached her front door, whispered *"As-salamu alaykum,"* and giggled as she added "Good afternoon." While writing in English came as naturally to her as writing in Urdu — both were first languages for Asra — she rarely heard English or had the chance to practice speaking it.

Asra studied engineering for four years in Victoria, Australia, where she received the equivalent of a master's degree. Then she returned to Hyderabad to marry Hassim. Now her priority is caring for her kids. Although she admits that chasing after children is boring, Asra is not interested in working outside of her home. In her upper-middle-class Hyderabadi Muslim family, she is expected to stay home. But, thanks to a brother who was interested in technology, Asra had been around computers most of her life. And her high scores in *Candy Crush Saga* and the word game Ruzzle reveal a competitive side. Knowing she loved computer games, her brother and husband encouraged her to work on MTurk. Her elder brother even helped her create an account on the platform, where she honed her ability to do image-tagging tasks for the requester called "Oscar Smith."[25]

When asked why she did MTurk tasks, she said, "Money." Asra paused, then chanted, "Money, money, money" to what sounded very much like the theme of *The Apprentice.* She watched movies and television shows in American English. Her house's generous-size rooms and the presence of her housekeeper, a Hindu woman in a bright-red, bangled sari, peel-

ing potatoes into the kitchen sink, suggested that Asra's reasons for staying with ghost work were more complicated. Pressed about the need for money, Asra smiled and said, "If I earn my own money, I can buy gifts for my family. I can contribute. I am part of something. I'm able to work, like other people. But my office is my home."

Asra does ghost work for more than just the money. We turned to our survey data to understand how common her attitudes might be among her peers and the likelihood of U.S. and Indian workers doing ghost work primarily for the money. Our survey data shows that workers living outside the U.S. are more likely to do ghost work primarily for reasons besides earning money than are workers inside the U.S. One plausible explanation for this finding is that ghost work requires the up-front costs of a computer and an internet connection. Statistically speaking, if a person in India can access the necessary tools of on-demand work and has the requisite language and computer skills to participate in this online labor market, it's likely they already have some monetary resources and financial security before entering this workforce.[26]

For the past two years, Rajee, a Hindu woman, has worked roughly five hours a day on on-demand platforms. She lives in Coimbatore, in southern India, and stays up late at night to work on MTurk while her husband and two children sleep. She enjoys financially contributing to her household, too. Her productivity has improved her relationship with her husband, who, if he is awake while she's working, will bring tea and dote on her while she is at her keyboard.

More than the money, it's this familial acknowledgment of Rajee's contribution that means the most to her. She also enjoys being part of something bigger. She is active on closed Facebook groups for India-based workers and likes meeting fellow workers in the groups. Being a part of a community feels good, even when she's sitting alone at her laptop.

Asra and Rajee exhibit the temporal juggling act of many caregivers. Because it can be molded to fit into nearly any schedule, on-demand work offers them a way into the job market. Our survey data showed that

U.S. workers are more likely to work during the day than Indian workers. Since many of the companies that post jobs are based in the U.S., they usually post during U.S. business hours. Hence, workers in the U.S. can work during typical "nine-to-five" hours, and workers outside the U.S. have to adjust their scheduling to access more tasks.[27]

Our survey data corroborates Asra's and Rajee's stories. It shows that, while women and men do ghost work roughly the same number of days and hours per week, they differ in how they spend their time. Overall, men are more likely to do ghost work during the nights and weekends, and women are more likely to do it during the day and less on the weekends. If we assume that males are more likely to work a typical nine-to-five job outside the home during the day and during the week, and women are more likely to work inside the home during the day and during the week, a pattern begins to emerge. Women are more likely to do ghost work when their familial and household responsibilities permit. Men, on the other hand, are more likely to do ghost work in the evenings and on weekends, after they have fulfilled their outside-the-home work responsibilities.[28]

Lalitha, a Christian mother of two, also lives in Hyderabad. She left her call center job after getting married and later joined LeadGenius, seeing it as an opportunity to work without having to commit to a full-time position outside of her home. She enjoyed the work and did it well. But she turned down a promotion to junior manager — a post that requires workers to commit to both weekend and night shifts — because she did not want to compromise the care of her two children, what she considers her primary responsibility.

Lalitha illustrates something we saw again and again. Not all workers see on-demand work as a stepping-stone to advancement or even to steadier (eventually full-time) work. Instead, ghost work becomes a way to earn money and feel a sense of financial and personal independence in a life full of obligations to others. Our survey data showed that non-U.S. workers are less likely to report that the monetary reward is their top reason to do on-demand work. When earning money is not the top prior-

ity, workers do ghost work both for reasons of self-improvement, such as gaining experience or learning new skills, or for reasons of self-determination, such as utilizing free time or being one's own boss.[29]

There are two ways to interpret the gendered labor of on-demand work platforms and the value that women derive from this kind of work. The first view might celebrate on-demand jobs as opportunities to free women up to have it all, imagining that on-demand work is the answer to the working woman's dilemma of needing to leave the home to earn an income. The second view sees this work as perpetuating traditional expectations of women to handle both full-time family obligations and the workload of more formal employment.

Both views are equally valid reads of the situation. For some people we interviewed, particularly women, ghost work legitimized their contributions and gave them a way to feel valued. Women are not unaware that their options are limited in formal employment, at least in part, by the expectations that they will continue to manage their roles as wives, mothers, and adult children caring for aging parents. In the absence of other options, like fully subsidized parental leave and childcare, that make it easier for parents to equally share household responsibilities, women and men turn to ghost work as a means of getting out of the office as they strive to balance commitments to family and other dimensions of their lives.

HUSTLE

Like entrepreneurs aspiring to greater fame and forgoing pay as part of that path or those hoping that their online media productions will pay off, some use on-demand ghost work to build an on-ramp to a new career.[30] Ghost work can become a stepping-stone or easy-to-access on-the-job training. On-demand work becomes a "sandbox" where people can practice things like graphic design, typing, transcription, computer literacy, and language translation. These experiences are more difficult

to acquire in a more traditional workplace, where there are greater expectations and pressure to perform.

Virginia has a bachelor's degree in international studies and a master's in global affairs. As a native Spanish and English speaker, she wanted to put her language skills to work at the UN or another nongovernmental organization, advancing a peaceful mission through cultural exchange, but she struggled to find an entry-level job. When Virginia became a project manager with Amara two years ago, she had opportunities to develop her Spanish-English translation skills as well as to practice learning several more languages. "I can speak decent Arabic and French now! I couldn't do that with any other job. It's like being paid to go to language classes every day!" Virginia saw her work at Amara as a way to build her dream career. "I can take what I'm learning anywhere that I want to go next." She effectively uses Amara to create value and meaningful work for herself, and Amara's worker-centered focus allows her to transform ghost work into decent on-demand employment.

Like Virginia, Gowri, a 23-year-old living in the small town of Erode, in south-central India, saw MTurk as a chance to practice and to build skills she could use for future work. The oldest child of parents who teach and sell their weaving, Gowri decided to try on-demand work through a course at a local computer center that taught her how to set up an MTurk account. Her focus: to improve her English and basic computer skills. "I can write English, but it is hard to learn everyday English phrases through newspapers and magazines. MTurk tasks let me look terms up and practice searching for information, like postal addresses in other countries, that I would not otherwise know how to do at school."

For now, Gowri is focused on saving money for her upcoming marriage and learning the communication and computer skills that might give her access to better-paying work. "My typing has gotten so much faster doing this work. That is a skill that I can use if I go into accounting or take exams for finance. Really, everything that I'm doing now, I will do when I have a job in finance or at a bank."

These stories reflect the value that workers put on building their skills through doing on-demand ghost work so that they might be able to get a better job down the road. Gowri's desire to develop her typing and English skills shows that, while the overall trend might be for less-educated workers to primarily do on-demand work for the money, there are certainly exceptions to this general trend, and she is one of them.

Our survey data shows how the outside options workers may or may not have — due to the number of other income sources they have, their age, or their educational background — are associated with their motivations for doing on-demand work. First, workers who have more income sources besides ghost work are more likely to do ghost work for reasons beyond earning money. Second, workers who are younger are more likely to do ghost work primarily to gain experience or to learn new skills, as opposed to doing it simply for the money. Finally, workers who are more highly educated are more likely to do ghost work either for self-improvement, such as gaining experience or learning new skills, or for reasons of self-determination, such as utilizing free time or being one's own boss.[31] Taken as a whole, these results suggest that workers who have other options to earn — whether because they are younger, have more education, or have other income sources — are more likely to give something besides earning money as their top reason for doing on-demand work. For others, ghost work offers a way to support an interest that has yet to provide a steady income.

For example, Carmela, 30, relocated from Florida to Chicago to follow her dream of becoming a choreographer. In the past, she'd earned money by teaching dance and working as a brand ambassador, representing a company and marketing its products at events. Both part-time jobs paid the bills, but neither fed her dream. Teaching dance meant she had to adhere to a schedule and couldn't travel freely to pursue her choreography. Being a brand ambassador left her feeling empty; she calls it a dead-end job. "There's always going to be a company that needs their product pushed. It's not like it's going to lead to anything else. It's not benefiting me, as far as my career."

Like Virginia, Carmela had grown up speaking Spanish and decided to take advantage of the fact that she was bilingual and loved languages. She enrolled at a community college where she took classes in language interpretation and translation. Then she decided to volunteer to translate and subtitle TED Talks for practice as part of the Open Translation Project. From there she discovered Amara, just as the company started offering paid translation and captioning work on demand. Even though Carmela can earn more money as a brand ambassador at a corporate event in less time than it takes her to finish a transcription project for Amara, she chooses to work on Amara. "I can make money wherever and work on things that matter to me." She adds, "I'm not really looking to springboard into anything else. I want to be able to travel to pursue choreography. All I need to do is take my computer with me, and if I get a job assignment I'm still working. I'm living my ideal life."

Formal employment in the service sector — the kinds of work most readily available to both Carmela and Virginia — tie paychecks to weighty obligations. They tether people to specific physical locations in exchange for decent-paying work. The long hours or emotionally empty work can drain energy from projects, paid and unpaid, that they enjoy. Workers can make ghost work a navigable path out of challenging circumstances, meeting a basic need for autonomy and independence that is necessary for pursuing other interests, bigger than money.[32]

GLASS CEILINGS

On-demand jobs offer those in the U.S. and India who face workplace discrimination — particularly historically marginalized communities, women, and people with disabilities — digital literacy, a sense of identity, respect among family, and financial independence. Women who dropped out of the workforce to care for young children face barriers when they try to return. Women in the U.S. and India come from different religious and socioeconomic backgrounds, educational levels, and social roles, but women in the two countries share similar challenges in receiving fair

pay and recognition for their contributions in the workplace, at the same time that they, paradoxically, go unpaid for their irreplaceable work as caregivers in their households.[33]

Kumuda, 34, is a Hindu mother of two who lives in Chennai, a coastal city in Tamil Nadu. She has a high school diploma in electronics — no small accomplishment, given that she was born into a lower Hindu caste in which women often do domestic work for higher-caste families. She says she owes her education to her father, who kept her and her sister in school long past the point at which most girls in her village are kept home to work rather than continue their schooling. Her father's decision didn't go unnoticed by others in the village, and he was chastised for allowing his daughters to stay in school. The fear was that it could work against the family when it was time to arrange a marriage for Kumuda, as it's harder to find a match for an educated woman of her caste and class background.[34] But her father held strong.

Now Kumuda's diploma in electronics qualifies her to teach at a local computer training center. She also earns money teaching spoken Hindi. But her biggest source of income is ghost work. When Kumuda started working on MTurk three years ago, Kumuda's husband and in-laws were cynical. How could she make any significant money sitting alone, shut away in a back corner of the house, hunched over a laptop, completing jobs issued from companies in the Pacific time zone? But after her income matched, then surpassed, her husband's earnings as a repairman, she gained the support of her extended family.

Kumuda's earnings — nearly 25,000 rupees (roughly $350) per month — make her the highest earner in her town. Her dream is to earn enough money to start a coaching center, named after her father, so that all the members of her village will see the value in educating young women. "My father wanted more for me than he had growing up. Seeing me succeed — become the highest earner in my village — made him very proud."

Danelle, 35, spent a few years finishing her coursework and exams toward earning her doctorate in biochemistry. She experienced sexism in her traditional scientific work environment. That, plus the demands of

being a mother of two, made her decision to work on LeadGenius a more attractive option. She did ghost work for the company during its early days, when it was known as MobileWorks, and when the company got its second round of angel investing, it hired Danelle to be the office manager. She happily moved her family to Berkeley, California, to work as a full-time employee in the company's main offices. She describes LeadGenius as an incredible and inclusive workplace.

Despite being a world apart, Danelle and Kumuda both show how on-demand labor can have a transformative effect not only on workers themselves but also on their families. But it's not just women like Kumuda who face glass ceilings. People who had faced discrimination in the workplace because of disability, sexual orientation, or gender identity reported that on-demand work was a way to avoid harassment from co-workers with more seniority or power over them.

Lakshya, 34, was in an auto rickshaw accident years ago that left him paralyzed from the waist down. He lives with his immediate and extended family in a lavishly furnished home, in a well-established East Delhi neighborhood. Before the accident, he was a mechanical engineer, sending much of his income to his parents to help them buy the land and build the house that he lives in now. He spends most of his time upstairs, in a large corner bedroom with a balcony that looks out over the house's gated entry. Family members carry him about the house, up and down the stairs, but he rarely goes out.

After recovering from the accident, he looked for work for at least a year, but, after so much rejection, he turned to online work. At least no one online would see his disability. Although it has been illegal to discriminate against people with disabilities in India since the 1990s, it is not uncommon for people like Lakshya to feel pushed out of formal employment, as happens in the United States. He can never know if he's been passed over for a position because of his disability or because of the gap on his résumé from the time he spent recovering in the hospital, which totaled more than a year.[35]

For nearly two years, Lakshya has been doing ghost work on UHRS.

He does more than 150 tasks an hour on average, and in the previous month he had worked almost 200 hours on the site. Lakshya works on categorizing news stories, reviewing adult content, categorizing video content, categorizing the words that people use to search for items on Bing, and voice comparisons of British and Indian English. He also trains chatbots—voice- or text-driven computer programs used as intelligent conversational agents—to recognize differences between someone asking a question and someone making a statement, completes short marketing surveys and image relevance tasks, converts search questions into conversational forms, helps improve queries in Hindi, and reviews adult content captioned in Hindi. "I do it to keep my mind active," he says. "I have to do this. I have to keep busy." There is urgency in his voice.

People like Lakshya and Kumuda use on-demand jobs to pry open employment opportunities that might otherwise shut them out. Platforms like UHRS and MTurk provide very little, if any, data about the workers to the requesters. Recall from chapter 1 that the API abstracts away a worker's individual characteristics. All the requester knows is that worker ID A16HE9ETNPNONN did the work. The requester doesn't know if worker A16HE9ETNPNONN identifies as a man or woman; Muslim, Hindu, or Christian; disabled or not. The downside of this abstraction is that it's dehumanizing and can make requesters forget they are even hiring humans. The upside is that requesters can't as easily discriminate against Kumuda because she's a woman, or Lakshya because he is paralyzed.

When we started our research, Hindu nationalism was on the rise in India. There was an historic shift in party power from an ostensibly leftist, secular Indian National Congress to the Bharatiya Janata Party (BJP). Through the eyes of our research participants, we saw how this shift punctuated the explicit demands on women's allegiance to family, religious, and cultural obligations. Perhaps the political conservatism of the moment made on-demand ghost work more meaningful to the Indian women we met. Ghost work became a conduit to the oft-sought-after role of modern working woman. They could take on earning an income without throwing themselves into the tense national debates surround-

ing the impropriety of "call center girls" — women who work swing and night shifts, alongside men of all castes and religions, and who are often accused of prioritizing making money over propriety and piety.[36] At the same time, women in the United States were just as likely to talk about the value of on-demand work as a way to control their economic destinies, break into new work, or build up new skills while balancing childcare and eldercare.

People use ghost work to counter familiar pressures that come with making a living. But, turning to ghost work as an alternative has its limits, particularly for those experimentalists unable to find the resources or peer support to learn how to find a pace that works for them.

It's Not All Sunshine and Roses

On-demand work's Pareto distribution offers people a chance to tailor work around life commitments and get some relief from the pressures of a more typical plan B service sector job. As the workers' stories above attest, on-demand work is not inherently a bad gig. It can be transformed into something more substantive and fulfilling, when the right mixture of workers' needs and market demands are properly aligned and matched. It can rapidly transmogrify into ghost work when left unchecked or hidden behind software rather than recognized as a rapidly growing world of global employment. Technologies, in and of themselves, are not great equalizers. The most obvious check on the potential of on-demand work as an economic opportunity for everyone is that half the global population doesn't have access to it. On-demand work cuts anyone without a reliable internet connection out of the picture. If countries keep pace with current rates of internet growth, 100 percent global internet adoption is still two decades away.[37] And among those connected, the majority of the planet still accesses the internet on a woefully slow connection and uses outdated devices.[38] Despite relatively affordable 4G and broadband rates in India, many workers we interviewed struggled to maintain their work

hours during monsoon season, when heavy rains and winds frequently interrupt power grids. The world's working adults are not outfitted for ghost work, and no specific employer or government agency is tasked with changing that fact.

The other challenge is that, with so much variation in workers' schedules and commitments, the "flexibility" of ghost work's Pareto distribution means that people don't share a work site, hours, or a professional identity—three key ingredients to organizing workers' interests. Lastly, the lack of coordination among workers to stabilize the price they put on their labor, combined with the power requesters have to price work so that the lowest-bidding worker "wins," means that requesters can often find a pool of workers willing to do things more cheaply than others, which drives wages down for all workers on the platform.[39] That people weather the downsides of ghost work says more about the shortcomings of plan B employment than it does about the upsides of ghost work. It also reminds us that people will always find ways to make their work meaningful.

We found that workers doing on-demand ghost work, like workers everywhere, have more in mind than getting paid when they take on a job. Caring about something other than a payday is a way to feel some measure of power, control, and autonomy in a world where economic pressures curtail fully chasing our dreams with reckless abandon. One of the most common ways people make the economic necessity of work meaningful is through social connections and camaraderie.