



Fondazione  
Giangiacomo  
Feltrinelli

# **Unboxing AI**

## **Understanding Artificial Intelligence**

Edited by

**Elinor Wahal**

With the preface of

**Antonio Casilli**

**Utopie / 108**

**Futuro del lavoro**

# UTOPIE

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Antonio Casilli



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## THE TEXT

Over the last decade, Artificial Intelligence (AI) has steadily surged in popularity, with AI solutions being increasingly adopted in a wide range of industries. AI's rapid technological advancements have also prompted the enthusiasm of many consumers: for instance, during 2019 the unit sales of voice assistants like Google home and Amazon Alexa increased by 70% compared to the previous year.

Concomitantly, there is a growing fear over smart technologies' negative impact on societies, with mainstream media routinely discussing security risks, job displacement, and algorithmic discrimination. This contrast has sparked scholars' interest in the economic conditions, the political tensions, and even the philosophical assumptions underlying intelligent technologies.

From Amazon fulfillment centers to cyber-automation and data colonialism, this volume sheds light on the bodies at work in AI, providing a variety of approaches to the study of AI and its social, economic, and ethical implications.



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# Unboxing AI



# Preface

*Antonio Casilli*

Since the beginning of the 21st century, artificial intelligence has become a “black box ideology”. The meaning of this expression is two-fold. On the one hand, it designates an ideology of black box science which promotes approaches such as deep learning and data intensive models that adversely affect the transparency and accountability of techno-political systems. On the other, it means that the ideology itself is a black box, insofar as its actual policy content and social consequences are largely unknown to its proponents.

When designing the Unboxing AI conference, our intention was to change this state of affairs. Not by inviting our participants to think outside of the box — as tech gurus and media commentators like to say — but to unpack this cultural and technological construct that we call automation, to list its components, to describe its inner workings. Although most of the current research exclusively focuses on the consequences of AI on society and economy (job displacement, increased discrimination through algorithmic bias, security risks), there

is growing interest in the economic conditions, the political tensions, and even the philosophical assumptions underlying intelligent technologies.

Insights into these assumptions come from *Dominio e sottomissione* [Domination and submission], the last book of Italian philosopher Remo Bodei. This 400-page strong tour de force through human technology and animal nature, globalization and colonialism, labour and slavery posits a fundamental question about the Logos. The Greek notion designates both the philosophical Reason and the spiritual power of the Word—the same that famously “was made flesh” in the Christian myth of incarnation and in other religions’ theophanies. What if — Bodei asks — the Logos didn’t become flesh but rather machine to dwell among us?

Today, this question hangs over much of the public discourse about artificial intelligence. In the media, in the boardroom, and regrettably even in the academe, the starting point of every other conversation about algorithmic and data intensive technologies seems to be the assumption that contemporary machines are about to deliver on their promise of transcendental salvation. They leverage the Logos and give it back to us under the guise of smart objects, virtual assistants, self-driving cars.

Sometimes, this naive belief morphs into a political program. Probably best articulated by computer science pioneer Edward Feigenbaum, when he described artificial intelligence as the “manifest destiny, the goal, the destination” both of our scientific research and of our societies.

“I hold no professional belief more strongly than this. (...) I learned the term ‘manifest destiny’ when I studied American History as a young student. In the early 19th century, when the small population of the young United States extended only to the Appalachian Mountains of the east, great visionaries like Thomas Jefferson imagined a USA



that encompassed all territories to the far ocean at the continent's western edge. That vision, motivating generations of settlers and policy makers, was called the Manifest Destiny."

Expansionism and providentialism go hand in hand. The USA setting is emblematic, but it is not exclusively there that such belief has been expressing itself. From China to India to Europe, it lays the blueprint of major geopolitical ventures that favor specific groups of persons at the detriment of others. Whether it reveals itself as AI "evangelism", as data "colonialism" or as digital platform "imperialism", it proceeds by erasing the actual bodies and lives of persons that stand in its way. In Feigenbaum's metaphor, the settlers did manage to homestead the electronic frontier. But what happened to the natives? Sure, renowned visionaries like Thomas Jefferson dreamt of expanding their plantations from Monticello to San Francisco. But, to paraphrase a popular musical, "we know who's really doing the planting".

This explains why in this ebook, which contains on the proceedings of the conference Unboxing AI, Elinor Wahal has chosen to put a definite emphasis on the bodies at work in AI. Not only to document the presence of women and men behind the gleaming screens and the flying drones that constitute the facade of automation, but above all to provide evidence that intelligent technologies are deeply embedded into social structures and material conditions of existence.

Thus, contributors to this ebook adopt a radically immanent stance that consists in scraping the surface of AI as a "spiritual Word that was made machine" to listen to the human voices embodied in the flesh of tech workers working for big companies or startups, of blue collars operating warehouses or delivery apps, of social media influencers or data annotators, of parents juggling between house chores and telework. By anchoring artificial intelligence to human occupations and their vicissitudes in a time of health and economic crisis this joint INDL and Fondazione Giangiacomo Feltrinelli initiative aims to put

the human back in the heart of today's industrial and technological systems.

# Chapter 1

## Understanding Artificial Intelligence

*Elinor Wahal*

Over the last decade, Artificial Intelligence (AI) has become increasingly widespread. Between 2015 and 2019, the number of businesses adopting AI, or planning to adopt it in the near future, grew by a striking 270% (Gartner, 2019). The popularity of such technology has impacted virtually all sectors of the economy, from industrial production (Zhang et al., 2019) to public administration (United Nations, 2020) and even medicine (WHO, 2016) and volunteering.

On the users' side, AI's rapid technological advancements have often led to enthusiasm and increased consumption. For instance, during 2019, the unit sales of voice assistants such as Amazon Alexa or Google Home increased by 70% compared to 2018 (Strategy Analytics, 2019).

On the other hand, the rising popularity of smart technologies has also raised concerns over possible privacy breaches, as well as over algorithmic surveillance, eliciting many protests and forms of resistance.

Among social scientists and other intellectuals, the increasing proliferation of digital technologies has prompted fears over the possible replacement of human workers by algorithms and machines (Frey and Osborne 2017, Furman 2016). As a matter of fact, the impact of digital technologies on the job market has been for years a major research fo-

cus for most academics approaching AI from non-STEM disciplinary backgrounds.

More recently, numerous scholars have pointed out the importance of broadening the study of smart technologies beyond their effect on the future of work, to include their wider impact on societies.

Bringing together scholars from different fields within and outside the social sciences, this volume provides a variety of approaches to the study of AI and its social, economic, and ethical implications.

The volume opens by addressing the global pandemic that has been hitting the world since December 2019. As has become evident to all, one year after the Covid-19 outbreak, the pandemic has deeply reshaped the relationship between technology and work. Most notably, in many instances the sudden spike of telework has brought to light the situated nature of work and the numerous challenges associated to shifting activities online.

Interestingly, this is also the case for activities within the digital technology industry, that are often conceived as digital in nature.

The first chapter takes the form of a transcription of an interview with Sarah Roberts on the impact of Covid-19 on online commercial content moderation. In this chapter, Roberts reveals how deeply online commercial content moderation has been affected by the pandemic, especially in the Global South.

The rest of the volume is structured into three sections.

The first section includes four chapters addressing the materiality of AI. While the various authors approach such topic from different perspectives and disciplines, all the contributions included in this section are structured in line, or in opposition, with Marxian theory.

In their chapter, based on empirical research conducted with workers in Canada and Italy, and on an archival analysis of patents filed by Amazon, Alessandro Delfanti and Julian Posada address the increasing automation of Amazon warehouses, and its theoretical and empiri-

cal implications for contemporary work. As a result of their analysis, the authors argue that the increasing automation in the warehouses furthers the Marxian idea that workers are being reduced to machinery's conscious organs in an automated factory (what they refer to as 'machinic dispossession').

A Marxist approach is also adopted by Baruch Gottlieb and Maxime Cornet, whose chapter explores the notion of digital materialism, and its implications for a reconciliation of technology and ethics, towards fair production and use. In this respect, the authors stress the importance of mobilisation for better social conditions at large, rather than technical interventions to solve algorithmic biases. As such, they contend that under a fairer social and economic regime, technological development would be necessarily directed to improve the conditions of the overall population.

The following chapter is primarily structured around the concept of (data) colonialism. In their contribution, Couldry, Mejias and Pereira adopt a trans-historical analytical framework based on colonialism, to understand how data is capturing people's social lives, and the effects this is having for societies at large. The authors' core message is that by looking back into the deeper histories of colonialism we can better understand how data has become understood as a driving force for economic development and how extractivism underpins this relation.

Finally, the section terminates with a chapter by Andrea Miconi and Marco Marrone, who, through the Marxian concept of (digital) Surplus, argue that not only technology has not a proper life, contrary to what is often argued by platforms in their narrative, but that digital economy is still deeply embedded in labour value theory. Thus, Miconi and Marrone argue that behind user generated content, technology, and algorithms, there is not an emerging post-capitalist society, but only new ways in which capitalism obtain its surplus from human work.

The second section of the volume focusses on an element that is often neglected in the discourses about AI and, more broadly, digital technologies: the human body.

In their chapter, Leopoldina Fortunati and Cristina Voto reflect on the current impact of technology on the human body, taking as a starting point a previous publication on *Mediating the Human Body: Technology, Communication, and Fashion* (2003). With an interdisciplinary approach, almost twenty years after that seminal publication, they address how current technology mediates the human body and marks people's everyday lives. In doing so, they identify and discuss three main fields of interaction: 1) medicine, 2) fashion, and 3) Information and Communications Technology (ICT), with a particular emphasis on mobile technologies and robotics.

This section is well complemented by the contribution of Vicky Kluzik, who focusses on digitally mediated reproductive labour. Kluzik analyses specialized care platforms, bringing to light how care is framed as a commodity in the context of the European labour market. To shed light on the micropolitics of platform care, two main features of the platformisation of care are addressed in the chapter: the fragmentation of services ('taskification') and the valorisation of living labour as a service. Kluzik emphasizes the resulting increase in (gender) inequality and precarisation.

Finally, the last section looks into how AI and digital technologies shape current work and labour practices.

The section opens with a contribution by Lou Bradner, who analyses digital and urban networking practices of creative freelancers in Rome and Berlin, emphasizing how such practices lead to a profound intertwining of private and professional spheres, as well as of digital and physical connections. Bradner shows that, in the case of the creative industry, the relationship between digital space and social capital appears to be shifting: rather than only generating "bridging"

social capital to expand networks, digital platforms are increasingly private and intimate settings, explicitly serving the purpose of “bonding” with professionally-valuable contacts.

The relationship between digital technologies and creative work lies also at the centre of the chapter by Idil Galip, who examines what the practice of patronage looks like in the digital age, by analysing the case study of countercultural meme creators, and how they monetise their content online. Galip conceptualises niche-meme creators as online social entrepreneurs, building social capital in the form of online reputation to expand their network of funders and upholding a certain moral standing within their communities. Beyond the specific case study addressed in the chapter, the author contends that, by connecting borrower-patrons and lender-creators, digital patronage platforms are accelerating the transition from a product to a service economy.

The following chapter, by Saverio Minardi, Paolo Barbieri and Giorgio Cutuli, addresses a different aspect of the relationship between labour and digital technologies. By analysing the implementation of industrial robotics across Western European countries from 1997 to 2017, the authors investigate the heterogeneous relationship between automation, job composition, and class structure, in order to illustrate the significance of cross-country contextual differences in mediating the effects of robotisation. The authors’ findings demonstrate how the relationship between automation and work, far from being a deterministic process, is influenced by the particular structural context in which technology is applied.

The chapter by Kai-Hsin Hung analyses the case study of an Informational Technology enabled Services (ITeS) data processing firm in rural India. Through the analysis of empirical data, the author reveals that, in the considered case, the work done by data workers when building datasets fuelling advancements in artificial intelligence does not respect the minimum standards of decent work. As such, in the

specific context detailed, the author deems data workers as vulnerable workers.

Finally, in the last chapter of the volume, Janine Berg and Clément Le Ludec address how automation and artificial intelligence at work contribute to the expansion of employment peripheries and the worsening of job quality. The authors also address the increasing demand for virtual work, drawing on two key trends: the fissuration of work and the Covid-19 crisis. On these bases, they conclude by recommending to re-focus debates about digital labour on the strategy to lessen precariousness in the labour market and develop strategies to ensure that all workers benefit from the basic labour protections enshrined in labour law. Ultimately, they contend, the labour market is a social institution and for this reason it is up to societies to decide about the labour and social protections that are given to workers.

Before drawing this introduction to a close, I would like to provide some information on how the volume is organised.

This volume aims to disseminate the research and scientific knowledge on AI among scholars who are interested in digital technologies, but it also wishes to disseminate such knowledge beyond the closed circles of academia.

For this reason, all chapters are kept rather short, in order to make the content more accessible and palatable to non-academic audiences. For the same reason, each chapter also includes the video recording of the presentation that the chapters' authors delivered during the online conference Unboxing AI - Understanding Artificial Intelligence: A three-day conference about space, body and materiality of AI.

Finally, besides wide dissemination, this volume aims to foster the inclusion of early-career scholars in the production and diffusion of scientific knowledge. For this reason, in this volume, all the chapters based on the conference presentation of established scholars have



been co-written with early-career researchers, who have worked along with the conference presenters to adapt the presentation to the written format of a book chapter.

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## Chapter 2

# Moderating the world in a global pandemic

*In conversation with Professor Sarah Roberts  
(University of California, Los Angeles)*

Transcribed by: Hong Yu Liu (University of Cambridge)

In her presentation, Professor Sarah Roberts shared her insight about what exactly commercial content moderation is and why it is important, based on the research published in her masterpiece, titled *Behind the Screen: Content Moderation in the Shadows of Social Media* (Yale University Press, 2019).

Her research begins with the intellectual exploration of developing a theoretical boundary around commercial content moderation, by asking the distinctiveness of this form of labour with other forms of human intervention in internet social media spaces, which far pre-date Facebook and other major platforms today. Prof. Roberts argues that as soon as people are interacting with each other on computers, a social relationship is created. As a consequence, such relationships, whether articulated or not, are governed activities.

Compared to previous instances within the history of the internet, contemporary human intervention has become organised, paid, professional work; as such, it is considerably different from the relatively volunteer-based, community oriented, and community-governed

practices of moderation that occurred in the past. Notable examples of such switch include Wikipedia, Facebook and Reddit.

Prof. Roberts contends that this type of labour has become a distinctive form of paid, professional activity in the economy today, as it is happening on a larger scale and more organised fashion. As she observed, workers are sometimes considered low-status and low-waged, and usually organised at a level more resembling employment as supposed to a leisure or corporative activity. In addition, another feature of commercial content moderation is its secrecy. It differs from community-based moderation in which users might have seen the moderator in internet social spaces interacting and being visible to them, but it is not the case in the context of commercial content moderation.

Content moderation and its governing policies are becoming increasingly crucial elements for the contemporary internet business environment. This is because such content policies, and the tendency of each platform to allow certain types of material (and not others), constitutes a market differentiation strategy for these companies, as users might choose a platform based on perceived tolerance or intolerance towards certain topics.

## **1. The linkage between commercial content moderation and artificial intelligence**

Unbeknownst to many, artificial intelligence (AI) plays a pivotal role in commercial content moderation. While numerous of practices seem to be conducted by computation and automation, the “black box” of AI contains a massive amount of human labour.

For instance, in 2020, it is believed that there is a significant amount of computational, algorithmic, and machine-learning tools for platforms to automate content moderation. After monitoring the develop-

ment of the industry over the years, prof. Roberts observed that while internet companies are becoming ever more powerful and capable to replace human commercial content moderators with AI technology, this has not yet been implemented in reality. More importantly, this scenario is, and will always be, never impossible to achieve. This is because commercial content moderation is fundamentally based on human discretion, and it constantly needs human workers inputting their intelligence to the decision-making process and to implement companies' policies in order to make the AI system work. Therefore, contrary to popular beliefs, the natural outcome of having more computation involved in commercial content moderation is, rather than releasing human workers, demanding a greater number of workers.

Moreover, these algorithms are often optimised to make one particular type of decision, whereas human workers can contribute to the practice by bringing their cognitive intelligence – not only focusing on a specific issue but making all-around decisions that are too complicated to be programmed for computers. Lastly, as prof. Roberts' informants report to her, human workers are significantly involved in commercial content moderation for the purposes of training machine learning algorithms. As such, prof. Roberts maintains that there will be new roles where human workers.

## **2. Different types of commercial content moderation**

In her presentation, prof. Roberts shared her experience in researching different types of commercial content moderation early on. During the first stages of her research, prof. Roberts identified two key features of commercial content moderation. Firstly, that moderation is not a monistic, easy-describable, one-size-fit-all practice. Conversely, this phenomenon occurs across different industrial worksites, from the most authoritarian, surveillance, “call-centre” type environment,

to the most distant form of no-responsibility work relationship such as micro-work - and everything in between. Secondly, prof. Roberts understood the importance of the value chain of moderation. For this reason, she first researched the work in the United States, and then followed the trail of work, which ended up leading her to the Philippines. By the time her book came out in 2019, she had followed the trail of labour and found many examples of commercial content moderation around the world. The global division of labour in commercial content moderation is due to the 7/24 nature of the internet content industry.

While she had not made up her mind about different stations of labour practice in commercial content moderation at the very beginning, soon enough, prof. Roberts realised that the work is done in a number of different industrial sites. Content moderators are people who would go to the company's headquarters everyday, but would have less status than full time employees. They are contractors, they earn less, and they do not have employee benefits. In almost every case, workers told prof. Roberts that they had to sign a non-discourse agreement, which is a shared characteristic among all those worksites. For this reason, in her book she used a pseudonym for the commercial moderation company to protect her informants' anonymity as, in fact, they are breaking this confidently agreement by talking to researchers. What was unexpected to prof. Roberts, is that many industry practitioners in Silicon Valley would identify their company as the company she studied. This is a testament to the universality of prof. Roberts' research findings.

### **3. The impact of COVID-19 on commercial content moderation**

A recent development among content moderation companies is that they have become increasingly reliant on outsourcing and subcon-

tracting to labour service provision firms, in order to meet their excessive labour demand. While there are already many people working in their headquarters located in the United States, there is also a significant amount of workers based in the Philippines and other places around the world, in order to get enough people to deal with the scales of content it produces. The systematic outsourcing practice, what prof. Roberts refers to as the “call centre” model, are managed by workers from the headquarters. When COVID-19 became widespread in 2020, this model of putting workers in the “call centres” and relying on them as the main mechanism to get the commercial content moderation work done, was largely affected. For example, back in April, Facebook announced in their press release that they were having their content moderators work from home, without mentioning where these people were based. There is so much secrecy around the actual function these workers undertake, and prof. Roberts is convinced that these companies have no back up plan for workers to be able to work remotely.

In March 2020, prof. Roberts researched what was happening in the city of Manila, the Philippines, as it was under total quarantine. Suddenly, the workforce became unavailable, and the operations were seriously affected. As soon as they were able to do so, the companies called back their workers to the “call centres”. Therefore, prof. Roberts believes that the algorithms and AI are useful in a supportive, secondary role to the human moderation. However, they are not, and will never be, successfully operating without involving humans in part of the operation.

#### **4. The contribution of her book to the scholarship of information and labour studies**

When she started studying commercial content moderation, prof. Roberts soon realized that there was little cohesion or comprehensive

boundary-making in the academic context; that motivated her to fill this gap.

But that also implied an additional challenge, as she was trying to demonstrate a particular phenomenon and its importance, when most people had not seen it yet. As a consequence, she had to do a lot of advocating for the importance of this topic. Her effort ended up paying off, because she felt she had to answer the question to herself before persuading others why does this topic matter and why people should care.

## **Conclusions**

When addressing commercial content moderation, our understanding of the social media ecosystem cannot be complete if we only investigate the user side, without acknowledging the human labour which is essential to curate and filter online content.



**PART 1**  
**MATERIALITY OF ARTIFICIAL**  
**INTELLIGENCE**



# Chapter 3

## Boxing AI at Amazon Fulfillment Centers

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### 1. Machinic Dispossession

Warehouses are a vital component of Amazon's dominance of the e-commerce sector. The company uses these workplaces, scattered around major areas of the globe, to store commodities multi-floor "pick towers" with multiple shelves and cells before shipping them to their customers. Central to the operation of these warehouses are the almost million workers who are tasked with the storage, retrieval,

and shipping of these commodities. They work in a highly “datafied” environment, with constant interaction with data-intensive technologies. For instance, in some cases, workers interact with “Kiva” robots that move around the aisles of the warehouse to fetch the shelves for the workers who are located in fixed stations. These robots allow Amazon to store commodities more efficiently by piling the shelves next to each other, but they also intensify the workers’ labour process by increasing their work speed.

This chapter is based on research conducted by A. Delfanti interviewing Amazon workers in Canada and Italy (Delfanti, 2019) and analyzing the company’s patents (Delfanti & Frey, 2020). Delfanti argues that the increasing automation in the warehouses furthers the Marxian idea that workers are being reduced to machinery’s conscious organs in an automated factory. This process, that the author names “machinic dispossession,” describes the storage of worker knowledge through datafication into existing databases that are only accessible by individuals in managerial positions. This data is not located in the store locally, but in servers hosted by Amazon centres in the United States. The process of harnessing data from workers and storing it away from the work location is a crucial difference to traditional warehouse work, where workers would leverage power through their knowledge. Instead, in the case of Amazon, the application of this datafication process is used to organize the labour process and shift power away from the workers.

While the rate of robotization in Amazon is increasing, the number of workers employed by the company and the precarious working conditions inside the warehouses also increases. Interviewed workers reported working in increasingly fast cycles with a high turnover of up to one hundred percent each year, notably around peak seasons such as Christmas, Black Friday, and Prime Day. Staffing for these periods is intermediated through external agencies such as Adecco

or Manpower that have offices even inside the warehouses. Staffing agencies tend to hire mostly racialized workers for short periods—sometimes even days. They help Amazon exploit precarious labor at a massive scale, in some cases expanding their nets to hire hundreds of workers who live far from the fulfillment center. For the warehouse in Castel San Giovanni, which serves most of Northern Italy, staffing agencies bus workers in from as far as Parma, Alessandria, or some working class districts of Milan itself.

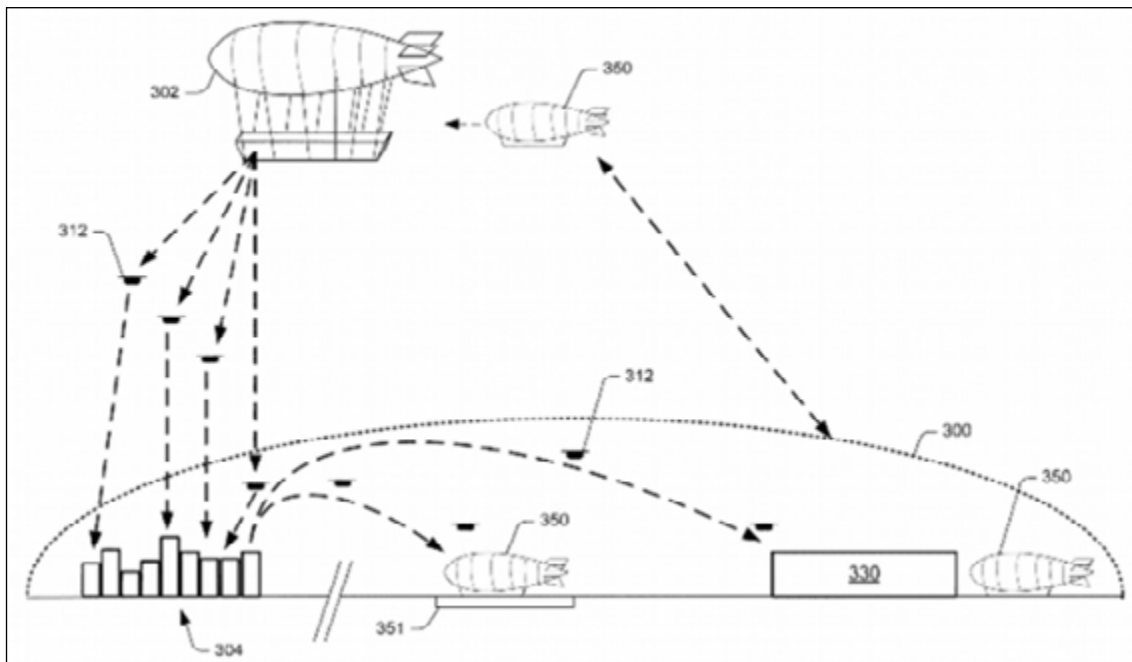
Furthermore, there is a datafication of work under machinic dispossession where worker knowledge is quantified, “datafied,” and fed into the machines. In this context, humans become the “appendices” of machines, extending their artificial perception in two critical moments. First in the storage. In warehouses, barcodes are used to identify both humans and objects. Management uses technologies such as scanners to incorporate workers’ labour into the machines, notably since commodities are stored randomly throughout the warehouse to maximize space. For this reason, no human being, including management, can remember the objects’ location. The second part of the labour process involves the retrieval of commodities and the shipping. Customers activate this process when they purchase a commodity. The technology at the warehouse tasks the workers, using their capture knowledge, to retrieve the objects, pack them, and send them to the customers.

## **2. Amazon Patents**

The application of Amazon’s technological innovations feeds to the anxiety of a fully automated world: both a dystopian vision where robots will take over humans’ jobs and a utopian vision of an abundant society liberated from the “burden” of work. This second chapter section focuses on the futures imagined by Amazon through the lens of its public patents (Delfanti & Frey, 2020). Patents are public docu-

ments that grant protection for future technological development and unique objects to look at how corporations aim at owning futures. A patent may never materialize and is often used in court to sustain threats of litigation against competitors. They also tend to be broad, trying to reach an area of the technology future, aiming to own the ideas behind a set of technologies. Thus, instead of showing future technological development, patents provide a glimpse into Amazon's vision for the future of work.

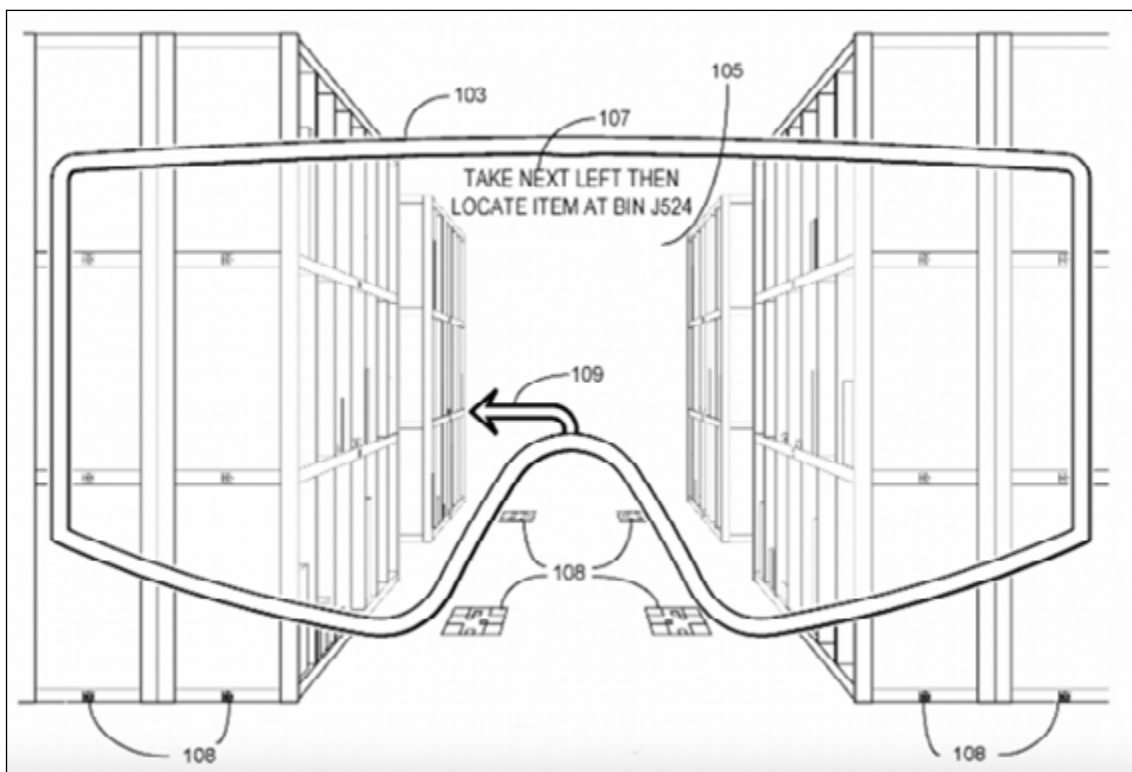
Delfanti and Frey's research looks at patents related to inventory management in warehouses and the extraction of knowledge from human labour. Often, these patents erase the embodied workers from the picture: human operators are outlined minimally, often drawn as a silhouette. Furthermore, there is no mention of the gendered and racialized workforce in the fulfillment centres.



*Figure 1*

Some patents imagine spectacular innovations that are unlikely to materialize anytime soon, like airships that would deliver commod-

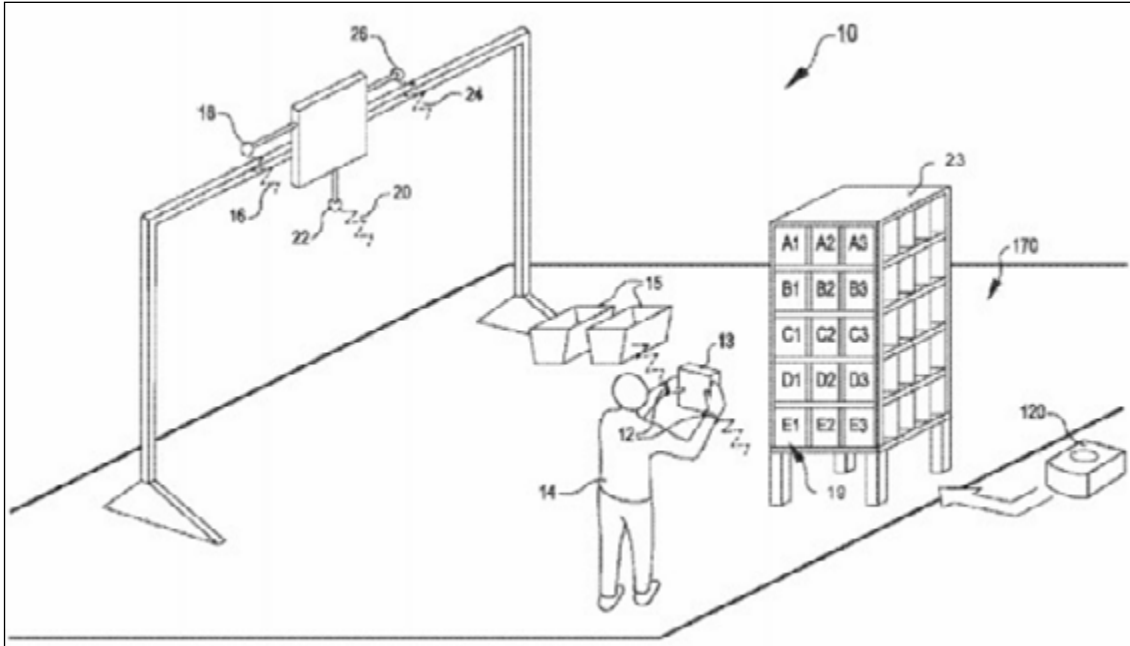
ities from the air (Figure 1). Some patents also imagine a fully automated warehouse without humans. However, these two examples are among the rare cases since many of these documents acknowledge the continuing need for human labour due to technological and financial constraints. For instance, one patent mentions that “automation is [...] expensive and time-consuming to implement, unlike a human workforce.” However, “it is inevitable [...] that the paths of the robots and humans working in the warehouse will cross.” At the same time, patents recognize that “direct contact between the humans and the workers can be problematic and a maintenance issue for the robots,” acknowledging that the costs of maintenance outweigh those of labour in some instances and that workers in these warehouses have higher rates of injuries when using these robots.



*Figure 2*

For instance, one patent (Figure 2) presents a device that serves to intensify the labour process. The patent describes augmented reality

goggles that use storers' knowledge to indicate pickers the location of shelves and cells. Workers would see visual clues projected on their normal vision, such as in the example, where arrows would indicate the worker where to turn.



*Figure 3*

The next example (Figure 3) shows a haptic bracelet that provides feedback to the worker's hand through vibration. The wearable would vibrate as the worker would approach a shelf to indicate in which cell the worker would find a desired commodity, speeding up the labour process.



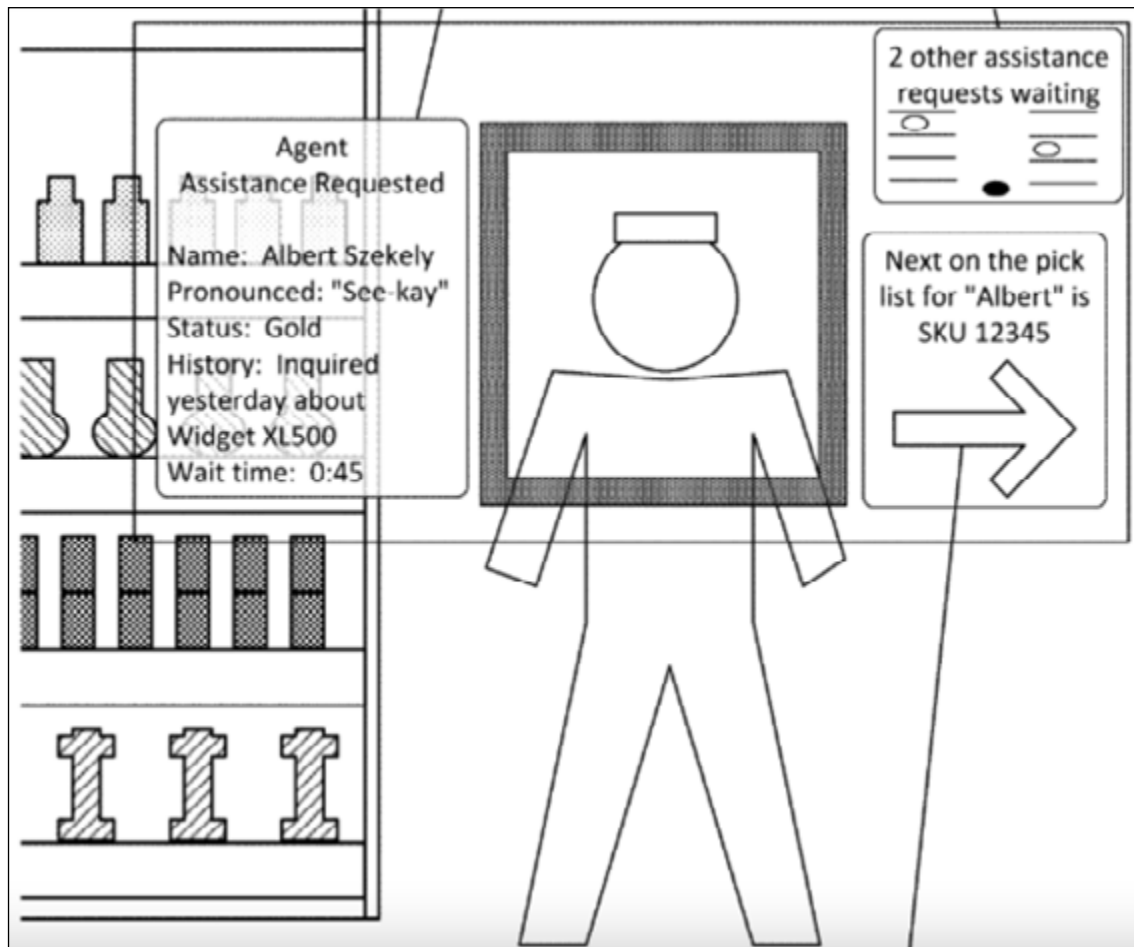


Figure 4

The following example (Figure 4) comes from a technology patent that improves surveillance through augmented reality. After identifying workers through facial recognition, the augmented reality software would project information about the worker to goggles worn by a manager. The displayed data would mention the name of the worker, how to pronounce it, their status, wait time, and other information.

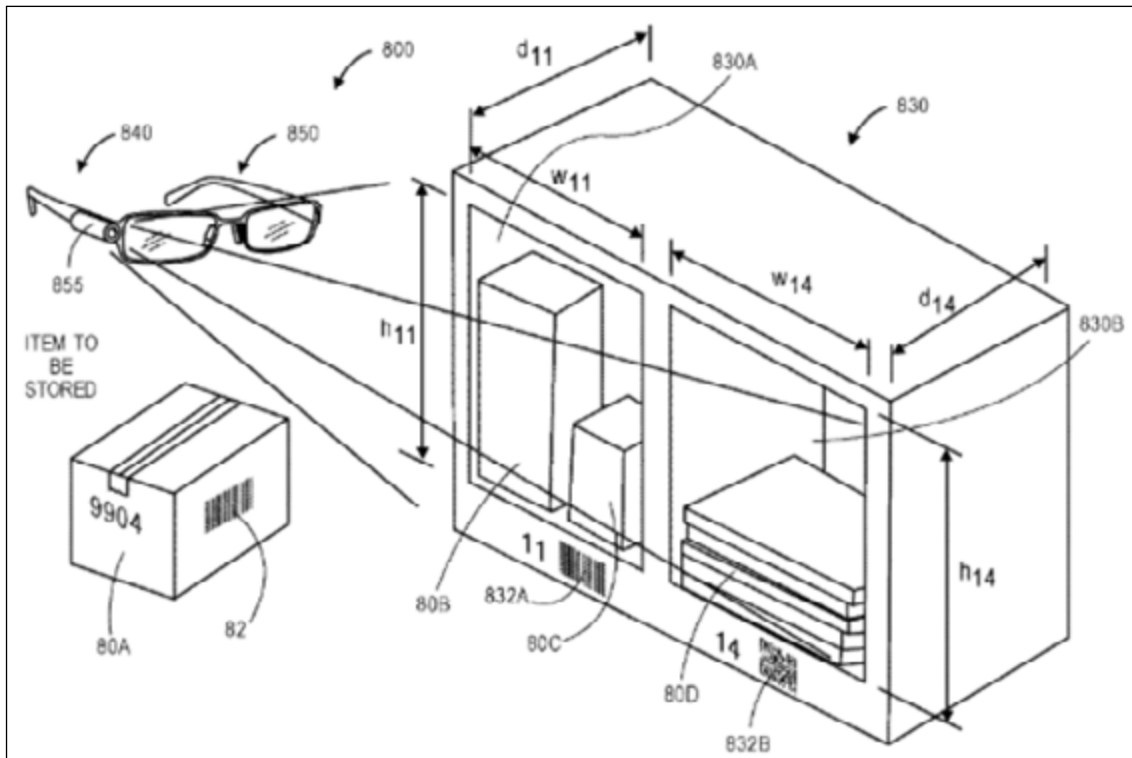


Figure 5

These examples show how humans are imagined as carriers of sensors: workers become machinery's "conscious organs" (an idea derived from Taylorism). These technologies incorporate the worker's knowledge and best practices into the machinery, echoing Leopoldina Fortunati and Cristina Votos chapter on the fact that bodies become communicative agencies and carriers of technology (2020). Amazon's patents imagine extending time-motion analysis into the worker's body through sensors that capture data for software systems. These data-hungry devices capture workers' behaviour and knowledge through accelerometers, speedometers, gyroscopes, cameras, optical sensors, GPS, microphones, and other technologies. One example are these glasses (Figure 5) that incorporate sensors activated through workers' movements. As the worker looks into the cell, the software calculates the most efficient way for the worker to store a commodity.

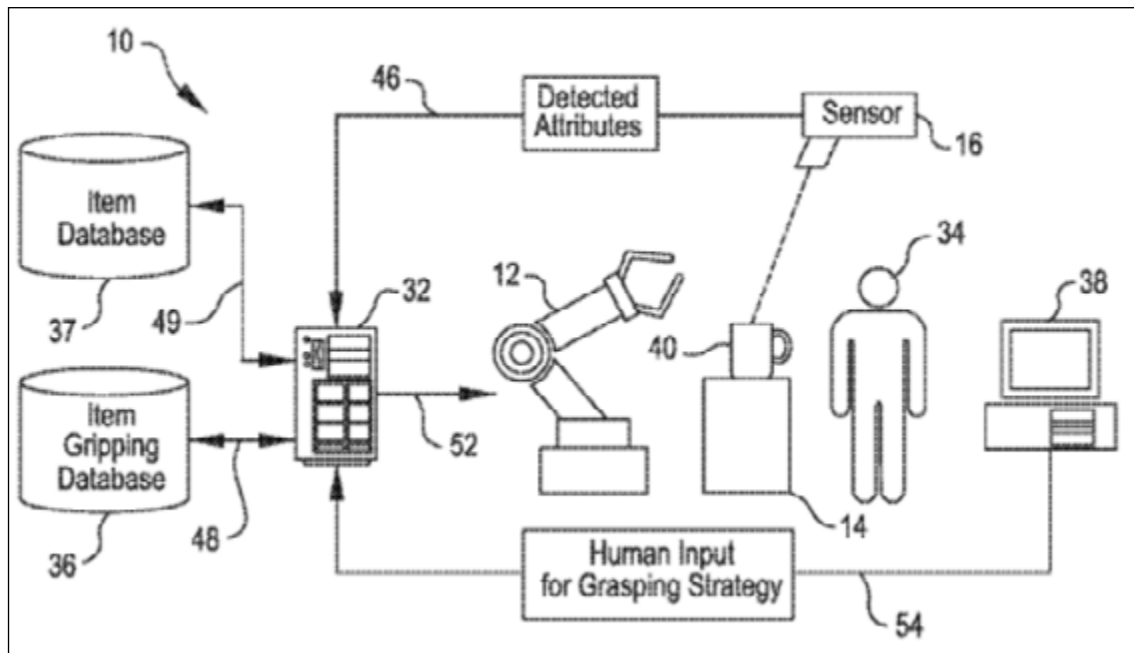


Figure 6

Another example (Figure 6) shows a type of system that feeds from human inputs more directly. In this patent, a robot arm is tasked to grab an item. For the robot, this is a complex task that involves specific protocols of appropriate movements, pressure, and efficient timing. The robotic arm is controlled by a computer, sensors that detect the attributes of the item, a database of products, and a database of gripping strategies. If those sources are insufficient, a worker would then “generate grasping strategies” (meaning to grab the item while being subject to the data capture systems). In this case, the purpose of the worker’s intervention is to optimize the machinic dispossession process.

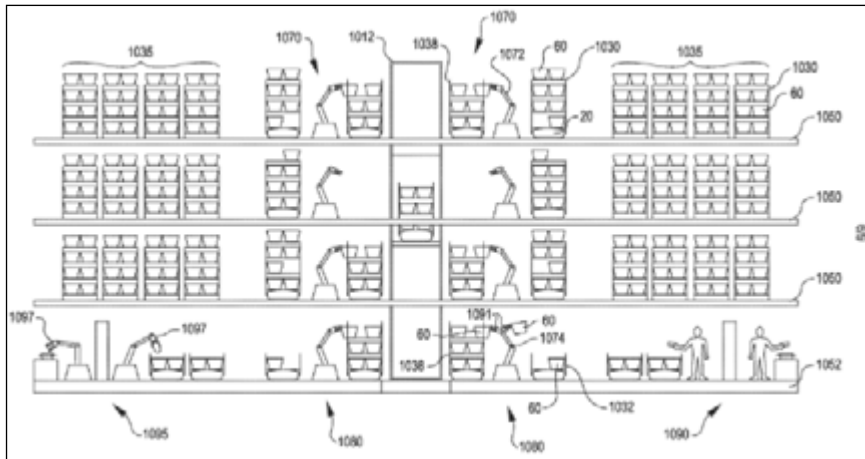


Figure 7

In other patents, Amazon imagines warehouses where workers are present in the peripheries (Figure 7). The objective of this systems is “to facilitate the division of inventory item processing between automated and manual options,” detecting whether an item can be managed by a robot or a human. For the company, both humans and machines are considered as “entities,” “operators,” or “agents” in the case of this patent, accepting the inevitability of having workers in the warehouse, even after being displaced.

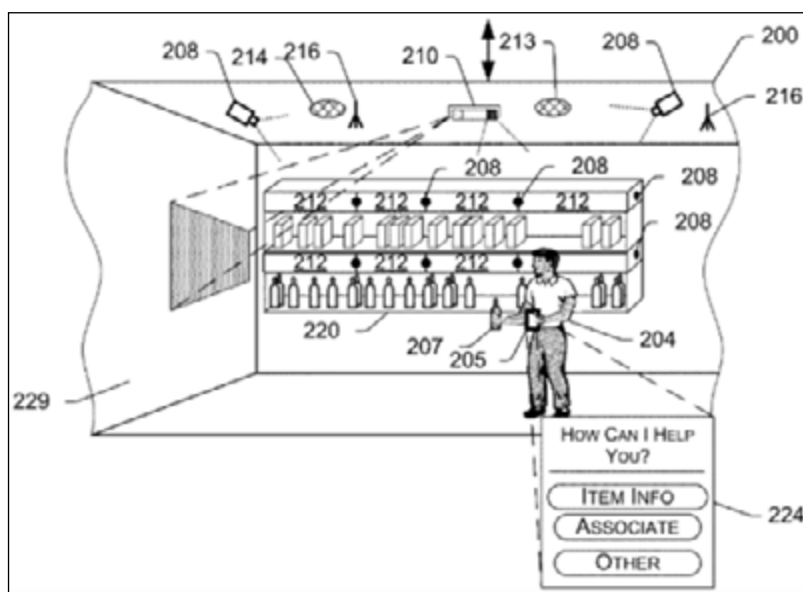


Figure 8

The final example (Figure 8) focuses on the automation of relational labour in worker support through a “frustration detector”: a set of imaging sensors would capture the movement and facial expressions of workers when they are unable to find an object at the warehouse. If frustration is algorithmically calculated, Amazon generates an intervention assistant that prompts the message “How can I help you?” However, this patent fails to mention if this message would come from a supervisor or a software.

### 3. Conclusions

As we have seen, patents do not imagine a fully automated warehouse in the near future. Instead, Amazon’s vision is one where workers perform repetitive physical work by being dispossessed of their knowledge by automated systems. The patents demonstrate that the company is working towards having humans extending machinery’s ability to perceive, act upon, and learn from their environment. Delfanti calls this “humanly extended automation” echoing Marx’s idea of workers becoming machinery organs arguing that, while automation increases capital’s ability to increase machinic capacities, they must first be excised from human labour. The examples shown demonstrate a tendency to innovate inequity by technology corporations. Nevertheless, it is important to remember that since “the future is unwritten,” the future of labour and society remains a political and not a technological issue.

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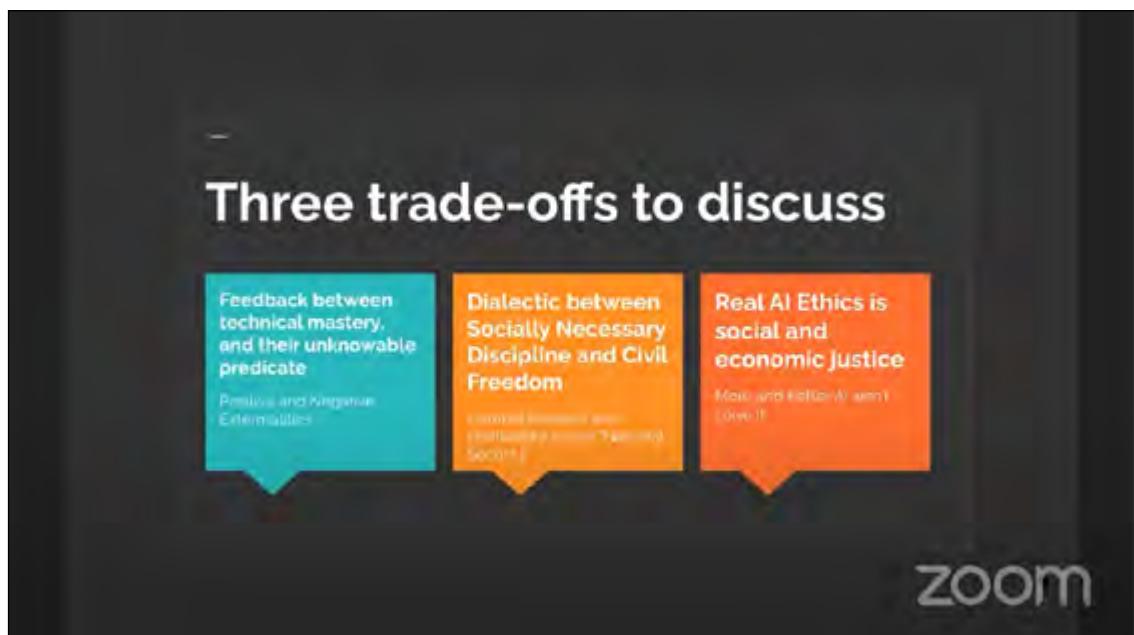
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# Chapter 4

## Digital Materialism and Cyber-automation

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Digital information is quickly becoming ubiquitous. We are increasingly producing data in our daily interactions with the world, and entire industries form around extracting and treating those data through AI systems. This datafication of society is accelerating due to the ongoing COVID-19 crisis, and it poses serious questions regarding the nature of labor. Ultimately, who produces the data? What is the place of labor in this information production chain, and how can we relate the notion of digital information industries with a Marxist interpretation

of the labor theory of value? Moreover, this overarching data collection process poses serious issues about surveillance, as well as power imbalance, algorithmic governance and biases. How do we achieve fair production and use of this technology? In this chapter, we try to explore those questions through the notion of digital materialism, and its implications toward a reconciliation of tech and ethics.

## 1. Digital materialism and AI

Digital instruments may seem forbiddingly complex, and it is tempting to think of the data flowing through them as immaterial information. But however complex they appear, they are based on simple mechanical principles which operate on the subatomic scale. This e-book for instance: it currently appears on a screen, itself composed of mechanical devices displaying pixels reproducing the text. It has to live on a storage device and was downloaded from the internet. Each one of those instruments can and should be understood as both a physical device employing rules of physics to perform as intended, and as the product of industrial processes materialized in the form taken by the devices.

Every functional element of digital affordance<sup>1</sup>, from the display surface to the ICs where the data circulates, is based on simple mechanical principles and, being all product of human industry, are entirely know-able. We can decompose each element of the chain, and ground it in physical reality. On the macro level, computers and sensors whereby data are captured and processed have to be manufac-

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1 Affordance here is defined as the action possibilities readily available to an actor. Affordances suggest how an object may be interacted with, integrating the physical properties and design of an object and the actor's past experiences and pre-notions.



tured in traditional industrial settings, involving various workers in complex interaction chains, operating in very different settings. Similarly, information is physically stored on devices, utilizing the chemical properties of the various minerals of which the computational functionality is constructed on the chip level. Digital data itself as electronic charges in the metal of the IC is thus operationally always material. Without the materiality of the chip there is no data.

The affordance of today's ubiquitous networked computation involves operations which are both too large and too small for conventional human epistemology. The manufacture of the hardware affordance is forbiddingly complex and spans the whole globe, while the materiality of data is infinitesimal. For this reason, public discourse, even that taking place among technicians and engineers abounds in metaphors, which serve to bring the imperceptible down to human scale. As philosopher Vilém Flusser (2002) warned, however, these metaphoric bridges over epistemic gaps occlude the difficulty behind convenience. Although the technology is based on entirely knowable physical principles, there is general uncertainty concerning the principles ensuring the convenient utility they expect from their devices. The epistemic gap thus opens out on democratic and ethical deficits.

Technically and materially, AI machine learning automation presents no significant additional challenge to that mentioned above. The epistemic status of the hardware and its functioning are the same, as is the epistemic status of the data produced and processed. The public presentation of AI/ML as being some kind of technical wonder, impossible to understand even by the engineers and technicians who design it, is disingenuous and dangerously serves to derail and discourage public oversight. Just as the hardware functionality is knowable down to the tiniest transistor, so is every programmatic operation in the AI/ML. Even in the case where the computer generates its own subroutines the instructions, restraints and formal procedures use, for exam-

ple in so-called “unsupervised learning”, are all defined by the programmers. The choices made by the programmers are also materially informed, the physical availability computer processing resources, or the financial resources to acquire these, for example will influence how the ML will be set up to accomplish any task. Ultimately, everything involved in producing and reproducing AI systems is perfectly knowable because it is material. And because it is knowable, we can, in principle, have radical ethical purview over it. Digital materialism allows us to demystify technology and make it available for ethical evaluation and political scrutiny.

## **2. Socially Necessary Discipline and Civil Freedom**

Understanding the materiality of digital phenomena, and taking a political stance on the subject is a first step, but how do we influence the process? If we come to understand fundamental concerns related to big data or AI, we face an agency and political gap: how can we instantiate our insights in the political sphere?

It is necessary to re-inscribe the datafication phenomenon, the AI systems that allow it, and the devices on which those processes are produced and reproduced in their global socio-economical value systems. Here the concept of “socially necessary discipline” can help us. The concept outlined in Gottlieb (Gottlieb, 2018) asserts the central epistemic condition of any technology resides in the trade-off or dialectic between the discipline inscribed in its materiality and the freedom that the technology actuates.

For instance, computers are the result of incredibly complex, and regimented industrial processes, mobilizing actors with various interests in diverse parts of the globalized production chain. Lithium miners in Africa or South America, very probably will not have the same interests as engineers and designers in the global North, or as factory

workers in Asia. To ensure that the final product works according to specification, very strict social control and discipline must be applied throughout the whole production chain.

Over the past few years, more attention has been focussed on working conditions in the electronics production chains. For instance, the Foxconn fabrication plants in China (Tam, 2010), or the mineral extraction sites in Congo (Frankel, 2016) impose extreme discipline on labour. This discipline in the production chain is a counterpart to the material discipline undergirding the reliable functioning of the hardware which is produced. The metals in a CPU are not the ores dug up at the mine. In order to behave according to specification, they must be purified. As such, the chemical behaviour of the metals in the CPU behaves under conditions of extreme discipline. If there were any freedom in the CPU, it would not work. All software, services, AI, ML, anything running on a computer, is afforded by an incredibly intense and extensive regime of socially necessary discipline. This discipline produces the freedom-gains afforded by those tools.

We can examine the same trade-off with regard to how a national military produces a realm of socially necessary discipline which “protects” the civil sphere, whereby social freedoms can flourish. The extreme discipline exacted on the workers in the electronics production chain and the materials are the predicates for the freedoms enjoyed by the users. This poses an epochal problem: how do we navigate this freedom / discipline dichotomy? And what does this mean for AI Ethics?

As AI has begun to be implemented in more and more products and automated services embedded in everyday life, there have been countless outcries for ethical oversight. However, so far, no satisfactory approach has been established. Mark Zuckerberg epitomised this problem at the congress hearings, when he claimed the only solution to the distribution of misinformation and hate incitement on Face-

book was “more and better AI” (Baker, 2020). AI Ethics sprung up an academic cottage industry. Governments disbursed millions of dollars to fund research which has only had one significant result, deflecting concern about AI ethics, with high-profile campaigns placing much responsibility on developers. Similar to the problem of injecting philosophical sophistication into the practice of advanced sciences with ethical implication, such as genetics research nanoscience and bioscience (Rabinow & Bennet 2012), practitioners are often left with “ethical checklists” to fill out daily, which are compiled and used as proof that an ethical regime is being instantiated where the future is being designed. Moreover, the commercial imperative which over-rules algorithm production doesn’t depend on engineers but is inscribed in a global capitalist framework. Engineers and scientists must do their jobs or face unemployment. As such, the responsabilization of AI engineers and developers cannot be considered as a major solution to solve the issue of ethical AI.

Besides responsabilizing developers to act more ethically, AI Ethics tends towards another tactic of dubious effectiveness: tweaking the dataset. Tweaking the dataset means understanding that the data ingested to produce machine learning models comes from the world, with all the problems that this entails. As such ML, like any technology, will reproduce all the ills in the world, in a way that can only exacerbate these. To counteract this undesired result, the dataset to be ingested is tweaked to attenuate the undesirable features and enhance the favorable one extant in the reality to be modelled and propagated. In principle, it might sound valid to try to attenuate racism and misogyny in the results by reducing this in the dataset, but this is in practice a very tricky procedure which is likely to render the dataset useless since it no longer represents the actual environment in which the intelligence derived from ML is to be applied.

A much more reliable and realistic approach toward Ethical AI, albeit more politically challenging is the alleviation of the undesired features of society which are inevitably exacerbated by technologies. This can be done through ameliorating general social and economic justice. A fairer society would mean the datasets from which AI systems build their representation of the world would incorporate more fairness, and thereby reproduce more fairness in its results.

### **3. AI, Automation and Labor**

Another paramount ethical question regarding AI in the context of this publication lies in its relationship with labor. We already briefly introduced the conditions under which workers at various points of the production chain operate. But there is also a need to address the persistent discourse about the relationship between automation through AI and jobs destruction (Frey, Osborne, 2017; Rifkin, 1995).

Machines, technical devices, and AI systems by themselves don't create new value, as new value is entirely generated through human labor. According to classical theory (Gordon 1959) all value in the product of machines is an expression of the human labour recorded in the machine and its motive force. Therefore, since automation creates no new value or profits, capital will never bring about full automation. And indeed, there have been no noticeable trends of mass technologically caused unemployment (Autor, 2015).

Automation and technological advance rather radically disrupt the labour market and generate new, more profitable forms of precarity for labour, as we observe in the fracturing of the labor market into micro-jobs and mini jobs. In this sense, AI is very effective at detecting the capacity of people that could be employed for a bit of surplus value extraction and assigning them micro-tasks. The labour market will be

radically disrupted and reorganized through the increasing adoption of AI. The social impacts will be enormous, and governments must make accommodation specially to help those who get lost in the shuffle.

#### 4. Conclusions

To achieve a more ethical technology apparatus, we must rather militate for better social conditions at large, which will find their way into the data corpus, and thereby be replicated through automation and data-driven cybernetics like AI. “Tech won’t build it” (<https://twbi.ie/>) and “Amazonian united” (Amazonians United, 2020) are good examples of such mobilization. Those workers organizations are trying to influence tech through labor level actions, not only by trying to directly impact code itself. Big tech companies are promoting efforts for “better and less biased AI” which only means more AI regardless of whether it is really ethical or not. Trying to solve the issue through technical solutions is not effective action toward an “ethical AI”. Under a fairer social and economic regime where technological development is directed to improve the conditions of everyone, AI would finally be emancipated toward effectively improving the conditions of the generality.

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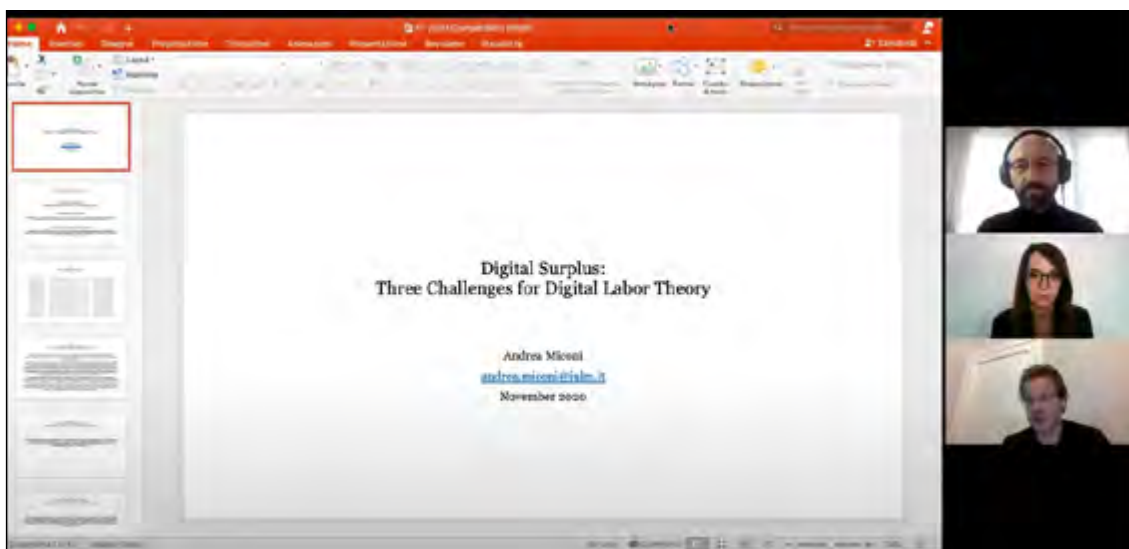
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# Chapter 5

## Digital Surplus: Three Challenges for Digital Labor Theory

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Digital economy is often described as a revolution leading to an immaterial economy, radically different from industrial developments and based on something different rather than Capital's exploitation of human work. However, while on one hand there are no real evidences of automation replacing human labour, on the other, as addressed by critical studies on digital labour, with technological development we are increasingly witnessing an expansion of the ability of capitalism to exploit human activities. In this perspective, Marx's analysis is not only an essential tool to address this criticism, but also to investigate



the real implications of the transformations involving the global economic scenario.

Moving from his analysis, in this chapter we will try to focus on digital surplus, meant as the ability of Capital to extract value from the daily activities of human work and the role this has in addressing platforms development. By using this concept, we will argue not only that technology has not a proper life, as it is often argued by platforms in their narrative, but that digital economy is still very much embedded to labor value theory. Thus, behind user generated content, technology, algorithms, there is not an emerging post-capitalist society, but only new ways in which capitalism obtain its surplus from human work. In other words, Marx's analysis is still fundamental to see how Capital is increasingly using technologies to hide the huge amount of human work that is present in digital platforms, Foxconn factories, Coltan mines or any other activity that is part of the so-called digital economy (Casilli, 2019).

We will do this considering three main challenges digital labor theory moved by mainstream theories. They will regard the free nature of many of the services provided by digital platforms, the crucial role of data and the increasing platformization of the economy, which are often exposed as indicators of the emerging of a post-capitalist society. We will reply to such challenges by using Marx and highlighting not only how such developments are not going to such direction, but how labor exploitation and surplus extraction, two of the key characteristics of Marx's capitalism, are still two crucial aspects characterizing digital economy.

## **1. The rise of free labour**

Many of the most significant platforms such as Facebook, Google or Twitter provide free services which have become crucial in our

everyday life. The possibility to make use of a map service such as that provided by Google, which freely provide a service directly on individuals' smartphone, effectively brings a radical difference from the past. For this reason, many have stressed the impact of such a radical change in our economy, stressing the ability of digital platforms to undermine the pillar of traditional market logics by opening to a free services scenario. Especially those authors related to Californian ideology, such as Benkler (2006) or Anderson (2006), emphasize how technological development is opening to scenarios where both private property and traditional employments are not anymore necessary to get access to fundamental resources and services. In this sense, digitalization is establishing in western societies a gift economy similar to that investigated by anthropological studies in non-capitalist markets (Cheal, 2015). In other words, what they highlight is the tendency of digital economy to go beyond the traditional logics of the market. It is by doing that this is challenging the pillar upon which capitalism is based.

Thus, are we really going beyond capitalism? Why are companies accepting these tendencies and accepting to lowering the prices on the market? Is the free provision of service enough to claim that capitalism is over? Marx's analysis shows not only that such optimism may be excessive, but that capitalism has nothing to do with prices. Thus, even if the German philosopher has probably not even imagined the possibility of free exchange of commodities, he was aware of the tendency of capitalism "to cheapen commodities, and by such cheapening to cheapen the labourer himself" (1867). This because the value of goods is not simply the price this has in the market, but, as Marx argues in his labour theory of value, it is the result of the surplus that the Capital is able to extract from human work. In his words: "The value of a commodity is, in itself, of no interest to the capitalist. What

alone interests him, is the surplus-value that dwells in it, and is realizable by sale” (1867).

It is for this reason that Capital doesn’t use machines to replace humans, but to increase the extraction of relative surplus, which for Marx (1867) means reducing the amount of human work to be paid. The role played by the market is not that of determining the value of goods, as this is related to the amount of work that this incorporates, but it is limited to address price variations. It is for this reason that Benkler and Anderson are wrong. Even if free services are a crucial innovation, not only this is not enough to address a post-capitalist scenario, but the dynamics leading to their realization are very much related to those investigated by Marx.

Nowadays, free labor has also been extensively criticized by authors such as Terranova (2000), highlighting the increasing ability of capitalism to make people work for free. In her perspective, free labor is intended both as a productive activity that individuals engage outside a traditional employment relationship, which means deprived of both the salary and the typical control characterizing labor in the Fordist era. Nonetheless, what Marx (1864) has already focused on is not only the ability of capitalism to create those necessary conditions to avoid paying workers for their real contributions, but also the crucial role that unpaid work has in making capitalist reproduction possible. In other words, even if platforms provide many of their services for free, not only this does not imply that we are moving beyond capitalism, but, on the contrary, it means that Capital has found ways to increase the amount of unpaid work. This, and not a post-capitalist horizon, is what emerges from free digital labor.

## 2. Big data at its hype

The second key argument exposed in mainstream theories of digitalization is the emerging of a global economic scenario that is no longer based on labour control and exploitation, but rather on data extraction and management. This is, for example, the key thesis of Mayer-Schönberger and Ramge (2018) in their “Reinventing capitalism in the age of big data”, in which they underline how digitalization is pushing towards a data-rich economy where money, market price and labor exploitation are no longer relevant. In their words: “With the market economy advancing with the help of data, we may no longer label the future capitalist in the sense of power concentrated by the holders of money. Ironically perhaps, as data-driven markets devalue the role for money, they prove Karl Marx wrong, not Adam Smith” (Mayer-Schönberger & Ramge, 2018). Similarly, another perspective that has focused the crucial role of data is that addressed by Couldry and Mejias (Couldry & Mejias, 2019), who look at data as a new raw material that capitalism has recently discovered in its potential. Thus, it is this need of accumulating raw materials that finally moves platform to increasingly extract data and to continuously re-articulate its profile in order of “appropriating more layers than human life itself”.

Both contributions provide a relevant description of the crucial role achieved by data in global economy, but their ambitious analysis misinterpret what capitalism is. More than adopting a Marx view of Capital, they intend something closer to the interpretation of Capital given by Piketty (2014), where Capital is simply considered as the result of private incomes, assets, patrimonies, and others. In Marx analysis, in fact, money is not naturally distributed in an unequal way, but it is the crystallization of the social condition originated by what he calls “primitive accumulation” (1867). During this process workers are separated by their means of production and, for this reason, lose control

over their working activities which are instead governed by those possessing means of productions. It is by doing this that Capital not only ensures the possibility to control human work, but also to get the benefits of its result, constantly reproducing the social asymmetries that are reflected in money distribution.

Thus, the shift from a money-based economy to a data-based economy, despite being a radical change in global economic scenario, does not imply a transformation of capitalist relationships which lies also behind data extraction. Differently from what has been argued by Couldry and Mejias (2019), data are not raw materials, but they are also a product of human work which benefits platform interests. Therefore, while on one hand the analogy between colonialism and digital economy may effectively address some crucial features of platform economy, on the other, this is not what motivates platform in constantly expanding data extraction. They, in fact, not only tends to capture an increasing number of individuals in their productive systems, but it also provides those conditions to motivates them to constantly interact with platform's app in order to produce data. Many among those who have studied platform capitalism have addressed the crucial role of data, but they also highlight how, in order to be valuable, these need to be produced by the spontaneous interactions that humans have with digital technologies. Once again, in this case we see how it is the social relationship lying behind data extraction that makes impossible for humans not only to get control over them, but also to get benefits of their activities. Finally, alongside the hype of data that digital economy is producing, what we are facing is not the emerging of a post-capitalism economy, but new and pervasive ways in which capitalism keeps dispossessing humans from the result of their work.

### 3. Will everything be platformized?

One of the most common assumptions we may find among both supporter and critical of digital economy is the increasing tendency towards a general platformization of the economy. Despite this idea is differently articulated in the critical literature (Srnicek, 2016; Zuboff, 2019; Gillespie, 2018; van Dijck, Poell, & de Waal, 2018), they share a view where the hegemony of platforms' paradigm, nowadays indifferently used to describe companies like Amazon, Apple, Facebook or Airbnb, opens to a future a scenario that is radically different to that of industrial economy. For example, in the reading of van Dijk, Poell and de Waal (2018) platform society is the result of a general process of commodification that increasingly transforms "online and offline objects, activities, emotions and ideas into tradable commodities". However, while Marx (1867) would agree on the tendency of Capital to transform everything into a commodity, the view they express in their book looks rather similar to commoditization, which is the neutral term used to indicate such process. In their understanding, platforms are "multi-sided markets" where different players meet following traditional logics of demands and supply governed by platforms. In this view, those selling goods or services are like companies competing in a market where the role of platforms is limited to provide the necessary infrastructure where this happens. Therefore, platformization is seen as the result of market logics that are making emerge platforms as a business model destined to hegemonize the global economic scenario.

Despite this sounds as a realistic view, the problem is that once we assume that platforms' value is based on their appropriation of human life, this means that platformization does not place in the market, but "behind". As Marx states, in fact, the value of a commodity is expressed in its price before it goes into circulation, and is therefore

a precedent condition of circulation, not its result. Once goods and services enter in the market, their value has already been dispossessed from workers by platforms, which are not neutral infrastructures, but the actors of an accumulation process happening before commodities enter in the market.

It is for this reason that the future of platform economy does not solely depend on market competition, but a crucial role it is played by the ability of workers to defuse the power of platforms. In this perspective, the future of digital economy is unwritten and does not solely depends on platforms, but a crucial role is played by the struggles of digital workers which may fundamentally determine the direction of these transformations. Finally, it is for this reason that Marx's analysis remains a crucial tool not only to look beyond the veil of darkness posed by digital economy on human work exploitation, but also to understand how to challenge the unavoidable destiny of platformization.

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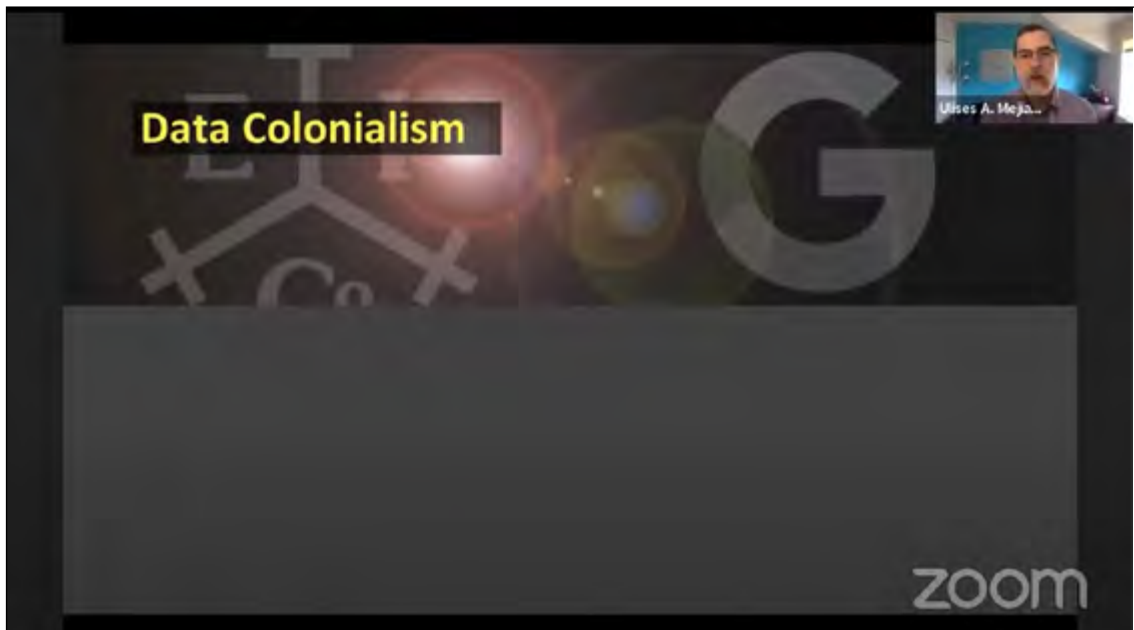
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## Chapter 6

# AI from the perspective of Data Colonialism: How data is (and isn't) the new oil

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A recent brochure published by the European Union goes above and beyond in declaring its embrace of datafication: “Data is the lifeblood of the economy and a driver of innovation.” Much is being left outside of this business-oriented vision for our data futures. We suggest a trans-historical analytical framework based on colonialism to un-

derstand how data is in fact capturing our social lives, and the effects this is having for all of us. Our proposal is that by looking back into the deeper histories of colonialism we can better understand how data has become understood as a driving force for economic development, how extractivism underpins this relation, what this could mean for our futures, but also how it may open our imagination to alternative imaginaries.

## **1. Returning to colonialism to understand data**

A lot of recent scholarly discussion has framed the developments of contemporary society as a new form of capitalism, originating from the intensive datafication of society. These scholars describe it as “surveillance capitalism” (Zuboff, 2019) and “data capitalism” (Myers West, 2017), among other conceptualizations. But what if it is something much larger, a new phase in the relation between colonialism and capitalism? We suggest to look a bit further back than we may be used to when thinking about digital technologies: the history of colonialism.

Recently, the magazine *The Economist*, as well as other publications, have put in their covers the idea that “data is the new oil” and “the world’s most valuable resource” while writing about large data-intensive platforms such as Google, Amazon, and Uber. Is this just a playful metaphor? We must remember that oil was (and still is) a colonial commodity, extracted from earth and mercilessly stolen from marginalized regions of the world. The comparison between data and oil raises the suggestion that what we are seeing now is actually a new phase in the *longue durée* of colonialism, aptly termed “data colonialism.”

In sum, this current scenario of data colonialism can be described as “an emerging order for the appropriation of human life so that data can be continuously extracted from it for profit.” This new phase of co-

lonialism is preparing the ground for a new mode of capitalist production, while being born from and co-existent with a vast array of neo-colonial legacies (such as racism, underdevelopment, and violence). In the context of datafication, colonialism is not just a metaphor, and the use of such concept is intentional. Though this new form of colonialism does not necessarily have the same level of physical violence we might associate with previous ones, it is based on very similar structural issues.

What is important is that the impact of the social change brought forward by data colonialism is comparable to previous forms of colonialism – even if not on a one to one scale. We follow Peruvian sociologist Aníbal Quijano, whose work contends that even if one could argue that colonialism as previously organized (through de facto colonies) does not exist anymore, the legacy of colonialism (coloniality) continues to shape the world around us (through e.g. power, race, and even knowledge relations). Although it is easy to recognize there are many differences in modes, intensities, scales, and contexts, data colonialism has the same function as colonialism historically had: to dispossess. To put it into simple terms: where the old colonialism stole land, the new one grabs our social lives through data.

The rationalities that are in the foundations of data extraction have a deep colonial past. Throughout colonialism nature was presented as cheap, free, and abundant. Colonizers said indigenous lands did not have a “civilized owner,” and then used force or cunning tactics to take them over. Likewise, labor was presented by colonialism as a cheap way of transforming nature into wealth. In a racialized manner, exploitation and abuse were framed as needed for social progress, or for the good of society. Much like these previous forms, colonialist discourses of extractivism are now a driving force in the way data is presented and understood. Like land and labor before, it is said to be abundant and to have no rightful owner. And, very importantly, the

only role given to users is generating data for the benefit of corporations, without having much (if any) influence in defining how such data gets stored, analyzed, or made sense of.

## **2. What is gained from understanding data colonialism?**

It may be unsettling to compare what is happening to and with data across the world today to colonialism, but there are two crucial advantages of understanding through this lens: scope/scale and depth.

In regard to scope and scale, data colonialism means understanding data relations with an outlook for the past 500 years, rather than just through the recent past. It also may help to better understand the future: data as a new historical form of resource extraction that could form the backbone of a new form of capitalism. The scope is also broadened beyond usual discussions that focus mostly on social media, thus including aspects such as increased surveillance, the rise of the “gig economy,” new forms of logistics for tracking objects (and the people that move them), and the increasing reality of internal corporate data analysis (a trove of information extracted from consumers and workers that is still largely untapped).

As to depth, a data colonialism approach deepens the understanding of what is being achieved through these data relations. This means attending to a new social order that is developing, with new forms of dependency and ways of governing human beings. This is being enabled by values of convenience and customization/personalization that undergird social platforms and their ilk. Importantly, developments in this area have continuously increased and reinforced older inequalities, especially those of class, gender, and race (as scholars such as Ruha Benjamin, Virginia Eubanks, and Safiya Noble have shown). The depth of colonialism enables us to see the current moment as part of a continuity of the West’s long-term attempt to impose a single version

of rationality on the world. We are not in a whole new stage, but in a fundamental continuation of this long-standing rationality, but with new technologies of data capture and analysis.

### **3. Data Relations and the Xs of Data Colonialism**

While focusing on data colonialism, we cannot forget its entanglement with capitalism. Going back to Karl Marx, labor relations are the engine for reproducing capitalism as a social phenomenon. When scrutinizing contemporary times, though, we have to think wider than just labor relations to understand data colonialism. We are also part of this emerging social order when we're living our everyday digital lives, messaging with our friends on WhatsApp, or hopping on an Uber. In sum, even when we are not working, value is being generated, or captured, from us and our data. The concept of data relations makes sense of this as “ways of reproducing social life and configuring social interactions to optimize data extraction for profit.” Data colonialism is, in sum, transforming life processes into ‘things’ with value, and ordinary social life is becoming a direct factor of capitalist production.

We seem to enter this spiral of data relations with no physical violence necessary, and increasingly more of human life is annexed to capitalism through our data. To further understand these movements, we return to the “coloniality” of our data relations, and trace transhistorical comparisons to the current developments in our data relations. To do so we are inspired by games such as the Civilization series, which are based on 4 Xs: Explore, Expand, Exploit, and Exterminate. In these strategy games, one can play as different colonial powers and use these 4 X strategies to conquer (and/or destroy) other lands. In order to keep this text short, we have chosen to focus on two of these, but our book on the subject, *The Costs of Connection* (2019), dives deeply into all of them.

In “Explore,” we compare two documents. If you install the Chrome web browser, you have to agree to “give Google a perpetual, irrevocable, worldwide, royalty-free and non-exclusive license to reproduce, adapt, modify, translate, publish, publicly perform, publicly display, and distribute any Content which you submit, post or display on or through the Services.” Although that may seem like a lot, there are no alternatives. We compare this to the Spanish Requerimiento, from 1513. This document was read by Spanish conquistadores, when they arrived in indigenous lands. Under the cover of darkness, they would read this document in Spanish to a population that didn’t speak their language: “but if you do not [submit], I certify that, with the help of God, we shall powerfully enter into your country and shall make war against you...” We are not saying these two documents are the same, but want to call attention to the use of misleading and abstract language to conduct the trick of dispossession, to conquer land or our data.

Another X, that of “Exterminate,” serves to identify two levels of violence exerted by data colonialism. First is the symbolic level, in how data colonialism attempts to extinguish alternative forms of thinking and being, thus making it seem that only the colonial ways of knowing are acceptable (i.e. epistemicide). Second is the physical level, how data colonialism continues the legacy of racist, sexist, environmental, and class violence. Among the many examples possible, we would like to mention the use of algorithms in hospitals in the USA (see Ledford, 2019), which cause both violent physical outcomes to Black people due to their biases and symbolical damage as hospitals are made to adopt the technology to supposedly drive efficiency and profits (even when it often is shown the effective gains are not great).

#### 4. How to decolonize data: The coming resistance

Our main argument is that the problems of our data societies are complex and historical, not just an issue that can be understood through looking exclusively at present day technologies. We suggest that the concept of data colonialism permits to better grasp the wider scope, scale, and depth that such technologies have historically, their extractivist characteristics, and how we are forced or convinced (through different ways) to relate to them. As a complicated issue, no one-track approach (such as deregulation or “opting out”) will work as a “fix.” More broadly, our suggestion is instead reclaiming the space and time that has been colonized by data, thus protecting the space of “the self” (defined in a relational view, beyond the limits of Western individualism). Therefore, what is most important is to emphatically reject the rationality of data extraction as something that unquestionably benefits humanity, perhaps in a similar way that we now more fully understand and accept the problems of oil as an extractivist and polluting colonial commodity.

For defending ourselves and society from data colonialism, we also need to forge alliances, including those that go beyond the usual academic circles and the Global North. There are many initiatives that are doing this work from the ground-up, such as: the work of Mohammed, Png and Isaac on “Decolonial AI” (2020); the Tierra Común network ([tierracomun.net](http://tierracomun.net)); and the Non Aligned Technologies Movement ([nonalignedtech.net](http://nonalignedtech.net)). We consider it important that these critical initiatives learn from past and present decolonization struggles in order to fully (re-)learn how to re-appropriate, create common knowledge, solidarity, and imagination against data colonialism.

Colonialism colonizes minds, not only our bodies. It is important to think about “Unboxing AI” and decolonizing data as exercises in creativity, the collectively imagination of how we could go beyond

the unrelenting extraction of data for profit we see today and towards new forms of connection. Imagination, in these complicated times, is crucial in order to think what could be otherwise, and build new, alternative data relations.

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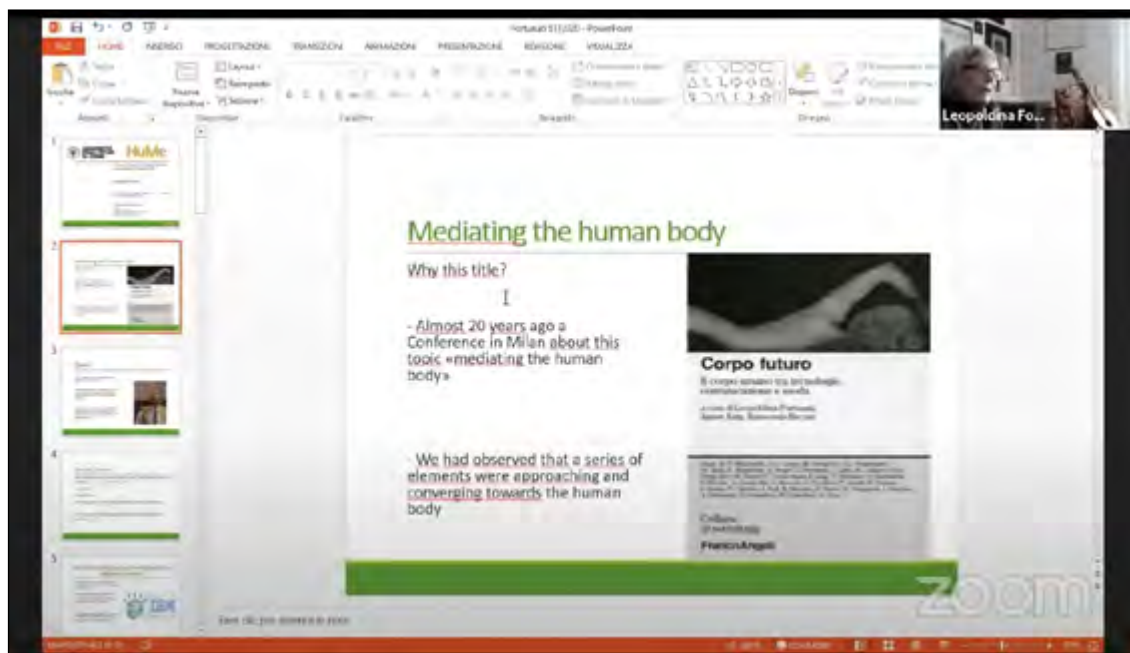
**PART 2**  
**AI AND THE HUMAN BODY**



# Chapter 7

## Mediating the human body in AI creation. Communication, the body, and AI

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Cristina Voto (University of Torino / Universidad  
Nacional de Tres de Febrero)*



### 1. Mediating the human body

The beginning of this text can be situated in 2001, when a conference organized in Milan by a network of universities from Europe, the United States, and Canada resulted in a publication titled *Mediating*

*the Human Body: Technology, Communication, and Fashion* (2003). The focus of that foundational event was the research for an interdisciplinary approach that is necessary in order to face the complex and emerging phenomenon of the mediation of the human body throughout technology. Today, two decades after that conference, a technological approach towards the human body has continued to mark our daily life, and three main fields of interaction can be recognized: 1) medicine, 2) fashion, and 3) Information and Communications Technology (ICT), especially mobile technologies, with a general increasing attention to robotics.

### **1.1 Medicine, technology, and the human body**

Medicine has always had the privilege to advance in the sacred reign of the human body, because in the face of science and its promise of survival, there is neither the resistance nor the courage to defend the naturalness of the body. As a result, over the last twenty years, medicine has developed the tendency to constantly appeal to technology to mediate its relationship with the human body.

A starting point for this first typology of human body mediation can be found in the way in which technology has turned diagnostic tools into physical robots or software systems, as in the case of IBM Watson Health, a division of the company aimed at facilitating medical and clinical research through the use of advanced information technology. These technologies are in step with the questions that emerge from the social-health context. Today, for instance, another system called Diagnostic Robotics has been designed to fight Coronavirus (COVID-19): it is a medical triage and clinical prediction platform that uses Artificial Intelligence to make healthcare systems more affordable and widely available. Apart from that, medicine has also activated robots at the therapeutic level: robots are being used in hospitals for welcoming or providing information to people and for assisting healthcare work-

ers. Among these therapeutic technologies, robots have been used to improve the mood of hospitalized children and in therapy for people with autism, Alzheimer's, and dementia. Another field of application is rehabilitation with the implementation of prostheses, where exoskeletons that can be created with computer-aided design and a 3-D printer are utilized. This hybridization between the human body and technology reactivates the issue of cyborgs (Haraway 1991), that mixture between flesh and plastic, metals, and ceramics, while posing the following question: to what extent is it possible to call such a mixture a human body as such? Finally, another test benchmark for mediating the human body toward technology is robot-assisted surgery, as in the case of the da Vinci Surgical System, which is designed to facilitate surgery in several fields like Gynecology, Neurology, Urology, and Orthopedics with a minimally invasive approach controlled by a console.

## **1.2 Fashion, technology, and the human body**

The approach to the human body through technology has always meant to cope with aesthetics and fashion: these two aspects cover and manage the widest area of the human body that mediates fundamental socio-cultural dimensions of our being in the world, such as the presentation of the self, sense of beauty, etc. Technologies, moreover, connect with fashion, contradicting the picture of the black box that is frequently offered through appearance: mobile phones and computers are designed in order to match the taste and aesthetic needs of the customer. Over the last twenty years, robotics has implemented its entanglement between technologies and fashion in two separate processes that need to converge in order to fertilize each other: first of all, robotics has experimented on materials, and second, fashion has experimented on the aesthetic appearance of robotics due to the entrance of robotics into customers' houses and the need for these robots to be pleasant. For instance, Givenchy Robotics, a department

of the French luxury fashion and perfume house, created fashionable robots to stay inside the house with elegant appearances, something that introduces a new question for understanding the encounter between fashion and robotics: do robots need to be dressed? Looking at what the robotics market has to offer, the answer seems to be yes, as suggested by the design of the three robots DORO (DOmestic Robot), CORO (CONdominium Robot), and ORO (Outdoor Robot), a group of elegant domestic robots that help the elderly and were produced by Robot-ERA, an international network for implementing easy-to-use and acceptable robotic service systems. The entry of the robot into our houses decreed the similarity between human and artificial agency.

### **1.3 Mobile technology and the human body**

Mobile and information and communication technologies (ICT) may be the most redundant type of technology that stays directly on the human body, a novelty that brings many consequences with respect to other remote technologies such as computers, TVs, or radios. The loss of distance blurred the perception of alterity between human bodies and mobile technologies, making the mediation deeper. Among these technologies, the first object to be grabbed upon awakening and the last to be set down before sleeping is the mobile phone, something that always accompanies individuals. At the same time, it makes new connections between the productive and the reproductive sphere, as a consequence of the entry of work into people's homes. The human body hybridizes itself and its perceptions with all of the following communication and portable technologies: laptops, iPods, smart-watches, and Google Glass. Thanks to these devices, the human body expands its communication agency. The first outcome of this pervasive presence has been the mechanization of immaterial labour in the domestic sphere. This strategic area has been completely reshaped: thanks to mobile technologies, communication, education, entertain-

ment, emotion, and sociality have been automated and redesigned by platforms and software such as WhatsApp, Facebook, Instagram, forums of discussion, Meet, Zoom, Badoo, Meetic, Tinder, etc. This panorama seems to result in the implementation of uniform, undifferentiated, and homogeneous social behavior which, in the worst case, can be more easily influenced, manipulated, and controlled. Furthermore, the development of social automation in many fields such as emotion, taste, dating, and conversation has produced a double and parallel mechanism for which technologies are shaping and being reshaped by people's practices of use. However, with some insight, it is possible to recognize that these mechanisms have also served to bring about the acceptance of social robots by humankind, a process that consists of two main motivations: the first is to reduce the power gained by women at the communicative level through technology, and the second is the general need of the capitalist system to create a different labour source.

## **2. From body mediation to robotization: outcomes and consequences**

The diffusion of ICTs in the domestic sphere has taken place in a particular, historical moment; it is occurring during a reshaping of gender power relationships in the family and in the public sphere. Despite the ebb of feminist movements, in the 90s, women were involved in many social processes: the reshaping of gender power relationships within the family to be more in their favor than in the past; the strengthening of their mastery and control over communication; the appropriation of communication in the public sphere; and also, the reshaping of power relationships between generations inside the family (Fortunati 1998). In this particular moment, through the computer and the mobile phone, women's strength in communication was downsized. This

is one of the cases in technology in which women's strength in communication was used against women.

The advancement and circulation of these technologies has brought about two different scenarios: initially, women were less numerous than men in both accessing, owning, and using ICTs. Male users took control over communication and strengthened their control over information. However, subsequently, women have appropriated smart-phones in particular.

The focus on the socio-cultural consequences of this diffusion also opens up a series of problems concerning the need by the capitalist system to create a different labour power with the following characteristics: mobility, which means that it is no longer sufficient for workers to sell their work capacity (the capacity to move is the relevant point); automatization and intimate interaction with machines; separation from others, which makes the labour power more individualized and less politicized thanks to more delocalized networks of relationships; and the flexibility and capability to cope with alienation.

In the meantime, the human body has also inspired another specific technology: robotics. Different from automata, robots do not aim to refine the imitation of their inspiring entities but rather aim to imitate human gestures and actions to replace the material capacity for work. Furthermore, in the reproduction sphere, social robots aim to imitate humans' immaterial capacity of care. Today more than ever, robots have begun to perform a large range of tasks and specially to communicate and talk back, as it is already possible to experiment with robots in factories, chatbots in services, and artificial agents in people's houses. There is a convergence between robotics and ICTs: today, mobile phones are incubators of robotic interfaces, such as Siri and S-Voice. This new horizon allows scholars like Sugiyama (2013) to talk of mobile phones as quasi-robot, while Vincent, Taipale, Sapio, Lugano, and Fortunati (2015) argue that mobile phones are personalized social robots.



Additionally, in socio-healthcare systems, we witness the slow colonization of robotics, facing a reduction in the amount of domestic and care work by women with the relative decrease of the birth rate, the increase in divorces and separations, the increase in people living alone, etc. In the last decades, it is in the reproductive sector where the most important cycles of struggle and behaviors of resistance against capitalism have taken place, and from there, they have diffused into factories and workplaces. Thus, the diffusion of robotization, in terms of critiques of political economy, means the attempt to increase the value production in the social and individual reproductive sphere, increase social discipline, and correspondingly, decrease the autonomy, control, and knowledge of how to do things of the labour force.

The contemporary dynamics of the robot market have been marked by COVID-19 in terms of a block of industrial robot sales in 2020, and in the short run, a major contraction must be expected. In the medium term, there will be a digitalization booster that will create growth opportunities for the robotics industry. In the long run, observers claim that prospects will remain excellent for this sector. It is certain is that this pandemic has forced societies to increase their mechanization.

### **3. Conclusion**

The question we must pose in the face of these processes of information, automation, and robotization of societies is, once more, about the model of the society we want to live in. With the current diffusion of machines, do artificial agencies have to replace or to support human work? The first idea is the logic applied in the industrial sector, and the second has dominated in the reproduction sphere so far. However, is a world where we can leave all the work to machines a desirable world? Is a world in which our relationship with reality will be increasingly mediated by machines a desirable world? Finally, is a world in which

intelligent machines place the human body in the minority and make humans feel incapable a desirable world?

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# Chapter 8

## Seeing like a platform: caring democracies in the digital age

*Vicky Kluzik (Goethe University Frankfurt)*

The slide is titled "Towards the platformisation of care". It features a diagram on the left consisting of concentric circles. The outermost circle is labeled "Managers". The next circle inward is labeled "SE". The next circle inward is labeled "NSE". The innermost circle is labeled "Unpaid work (care, heteronormated labour)". A yellow, irregular shape is shown on the right side of the diagram, overlapping the "NSE" and "Unpaid work" circles. Below the diagram is the text "The expansion of the periphery (Berg)". To the right of the diagram is a text box containing the following text:

My research project is concerned with current interdisciplinary debates around the rise of the platform capitalism and its wider societal implications regarding the crisis of social reproduction.

- What are the specific relations of platform capitalism and the crisis of care? How can we understand the "platformization of care" from a processual perspective?
- Do platforms increase intersectional inequalities (class/race/gender-based discrimination)?

In the top right corner of the slide, there is a small video feed of Vicky Kluzik.

For any pressing societal problem, one can take for granted, there is a platform offering a techno-fix for it. For the 'crisis of care' (Fraser 2016a), the 'new-mom economy' is offering all kinds of services to fill in 'care gaps', may it be childcarers, dog-sitters, or cleaners. While the research and media focus of the platform economy's narration of flexibility is predominantly concerned with 'visible' gigs, such as the platform imperialism of Amazon, Uber and AirBnB, less attention is given to racialized and gendered domestic labour. This reflects the historical devaluation and institutionalized invisibility of reproductive

labour, historically ascribed to feminine and/or migrant tasks. The following considerations therefore situate the specific case of platform care of digitally mediated reproductive labour through platforms such as Helpling and Care.com in the vast landscape of the study of digital platforms and their repercussions on social practices. I conceptualize platformisation as an expansion of economic practices affecting multiple spheres of work and life that does not simply lead to a complex reshuffling of responsibilities and blurred boundaries between human and nonhuman actors (here: technological apparatuses). It also leads to an intensification of existing intersectional inequalities in the guise of flexibility, innovation and disruption. In combining literature from feminist theory, labour studies, STS and cultural geography, the article will equip readers to understand the emerging life-worlds of platformised social reproduction. In the following, I will first situate platforms as assemblages, second, I locate the framing of care as a commodity in the context of the European labour market, and in the third step, I underline the key characteristics of the platformisation of care.

## **1. New assemblages in the city? Situating platformisation**

Platform capitalism, when related to the multiple futures of work, describes the core shift from a hierarchical Fordist work structure towards networked forms of organization, although the ideal of standard employment is specific to the Global North (Vij 2019). After the financial crisis of 2008/9, digital labour platforms gained momentum and are increasingly offering important infrastructures of everyday life, as one is able to see with the teaming up of platforms with governments during the current pandemic. Research concerning platform labour has consistently shown that just-in-time, contingent, piece-meal work in the platform economy is offered through an increasingly

globalized, fragment and deregulated labour market (Woodcock and Graham 2020; De Stefano 2015).

Incorporating the new spirit of flexible capitalism, it has been widely argued that platforms serve as socio-technological architectures to connect worker and consumer, serving as ‘extractive apparatuses of data’ (Srnicek 2017, 48). In this conception platforms are considered to be ‘economic actors’ and actual companies, a fact that platforms usually aim to blurry. A second conception stresses the characteristics of platforms as an on-screen interface and hidden algorithm (Van Doorn 2017). A third conception considers platforms as ‘flexible spatial arrangements’, a novel organization of the city through a reorganization and recombination of already existing actors. Geographer Lizzie Richardson describes the specific spatial production through platforms as a flexible spatial assemblage, an interplay of differently networked actors orchestrated by the platform (Richardson 2020b; 2020a). In doing so, she draws on approaches from actor-network theory, in particular Michel Callon (2016) to examine Deliveroo’s ‘delivered meal’ as platform good. The concrete geographies of digital labour, Richardson argues, are never static, but are reconfigured and reassembled with each transaction. The assemblage approach allows for a multi-perspective examination of actors, algorithms and interfaces in order to shed light on the relationality of the matching process that previously appeared as a ‘black box’ (Pasquale 2015).

Platform care is embedded in distinct socio-spatial configurations, location-specific and performed on-site, which some scholars refer to as ‘offline platform work’ (Huws, Spencer, and Joyce 2016), the geographically tethered model (Woodcock and Graham 2020, 50) or ‘work on-demand via app’ (De Stefano 2015, 471). In this type of work spatial proximities and temporal synchronicities are required (Woodcock and Graham 2020, 61). Digitally mediated care and reproductive labour has only gained little attention, although they play a crucial part in the

proliferation of platforms as infrastructures of everyday life connected to ubiquitous ‘platformisation’, i.e. the ‘penetration of infrastructures, economic processes and governmental frameworks by platforms in different economic sectors and spheres of life’ (Poell, Nieborg, and van Dijck 2019, 6). When platforms are replacing or becoming substantial actors in the provision of care of formerly collective or public infrastructure, it is worth examining against the backdrop of the gendered and racialized inequalities regarding care and reproductive labour.

## **2. Care as a commodity?**

In feminist theory and politics, the concept of care entails different meanings and scope. A broad reference considers care as a ‘species activity that includes everything that we do to maintain, continue, and repair our ‘world’’ (Tronto and Fisher 1990, 40).

In this approach, care is understood to signify both the paid and unpaid reproductive labour that sustains life. In order to understand the reproduction gaps that digital platforms may be able to accommodate, a thorough examination of the ensemble of reproduction and care through the lens of labour is needed. Historically, the general societal attitude towards care work as feminine and therefore as inferior, invisible, and unrecognized has proliferated and is still constituting the power relations of the global labour regime. I therefore opt to consider care work as a ‘site of biopolitics, as a socially significant moment in the reproduction of life, which is made invisible when we negate the affective bonds of care and domestic work’ (Gutiérrez Rodríguez 2007, 70).

Around the world, care giving in private households has developed into the largest employment for migrant women entering the European labour market. This is happened through increasing state withdrawal from the institutional provision of care and the introduction

of ‘cash for care’ policies into private households in European welfare states, mediating informal arrangements. Female care work is hereby coded as a ‘gendered form’ of capital and also a ‘gendered obligation’ interlinked with the ‘moral economy of kin’, framing acts of caring as a ‘moral duty’ (Lutz 2018, 583).

The crisis of care points to the indispensability of social reproduction for the economic production in a capitalist society. One observes a dualized organization of social reproduction: externalized onto families and the community or outsourced to the market. As Nancy Fraser points out: ‘commodified for those who can pay for it, privatized for those who cannot’ (Fraser 2016b, 104). On the one hand, the communityisation of care work describes processes of privatization. Responsibilisation and activation policies and an externalisation of care responsibilities onto families and community paved the way for a regime that political sociologist Silke van Dyk calls the ‘rise of community capitalism’ and ‘post-wage politics’ (van Dyk 2018). On the other hand, the recommodification of care work is taking place as for-profit platforms offer care fixes as market solutions.

### **3. Platformisation of work and life: the platformisation of care**

The feminisation of labour, the increasing integration of women into paid employment, has been accompanied by a multiple burden that affects the reconciliation of wage and care work. Contemporary care economies are not exempt from the ongoing shift in boundaries between public and private, productive and reproductive - rather, they are at the centre of this readjustment. What can be observed here is what I would like to call the ‘platformisation of care’. Of central importance here can be the way in which a platform ‘sees’, that is, attempts



to orchestrate labouring and caring bodies through algorithmically controlled subjectification agents.

To understand the in/visibility regimes and the micropolitics of platform care, I aim to understand the platformisation of care as a distinctive process of the platformisation of work and life: the re-mediation of the boundaries of public and private, productive and reproductive, paid and unpaid labour. I understand this in two interlinked steps: first, the fragmentation of services ('taskification') and, second, the valorisation of living labour.

Fragmentation in this context means that more and more small-scale activities are offered as services via digital platforms. The range of tasks offered and mediated via platforms is large: on the website of *Betreut.de*, the German counterpart of *Care.com*, one can find babysitters, nannies, child minders, grannies for hire, child and senior care, dog or cat sitters as well as household helpers. *Helping*, for example, has specialised in the placement of cleaners, but is continuously expanding its own portfolio. These platforms provide flexible, just-in-time solutions to fill in 'care gaps', allowing for short term solutions. Secondly, with the platformisation of care, a valorisation of reproductive-affective labour is taking place that blurs the boundaries between production and reproduction. Thus, platforms can increasingly claim to contribute to the valorisation, formalisation and ultimately skimming of 'emotional surplus value'. However, platforms act here as agents of social and individual insecurity by attempting to govern invisibility and informality, as Julia Ticona and Andrea Mateescu outline for the specific case of domestic workers and platforms in the US (Ticona and Mateescu 2018).

The problems for workers on care platforms are as manifold as for other digital platforms, asking for the 'counter narratives' in relation to platform capitalism (Pasquale 2016). Due to the oversupply of workers on platforms, they have to stand out in particular. By necessity,

they have to engage in various practices of visibility management in order to assert themselves in the pool of care workers. Even if there is no ‘dictatorship of the stars’ from the platform operators’ point of view, as Helpling’s co-founder Benedikt Franke proclaims, the opposite seems to be the case: Through rating practices, reciprocal visibility management on platforms is analysed, hierarchised and finally (in-) visibilised by users and workers. Another significant point is the platform operator’s claim to formalize an ‘informal sector’. Helpling for instance positions itself as a responsible ‘mediator’ to connect client and partner, although not taking any responsibility as an employer granting employment rights or social security benefits to their workers that generate the profit for the platform.

#### **4. Conclusion**

Technological infrastructures co-create precarious workers who are assigned their place in the app ecology through automated feedback loops, self-tracking, control and optimisation systems. The platformisation of care reveals itself as intertwined processes of simultaneous fragmentation and valorisation of care activities. Through the interlocking of different logics of responsabilisation, reproductive labour is incorporated into the circuit of capitalist valorisation as a service. However, the techno-fix paired with the aggravated care crisis does not recognize invisible labour. This contribution should sharpen the view of a platformisation of care and the role of intersectional inequalities and feminized precarity, both on a structural level and on the level of the subjectivation of workers. This conceptual perspective can help to focus on the constantly renegotiated relations of labour, techno-fixes, care, and social change. As Ursula Huws claims ‘it is apparent that there is no simple technological fix for the problem of housework’ (Huws 2019, 21). The entanglements of class, race, gender

and technocapitalism do not overcome gendered social relations, but in fact perpetuate and even exacerbate existing inequalities. An intersectional approach is at the center to resist the promises of technological solutionism.

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**PART 3**  
**AI AND THE PRESENT OF WORK**

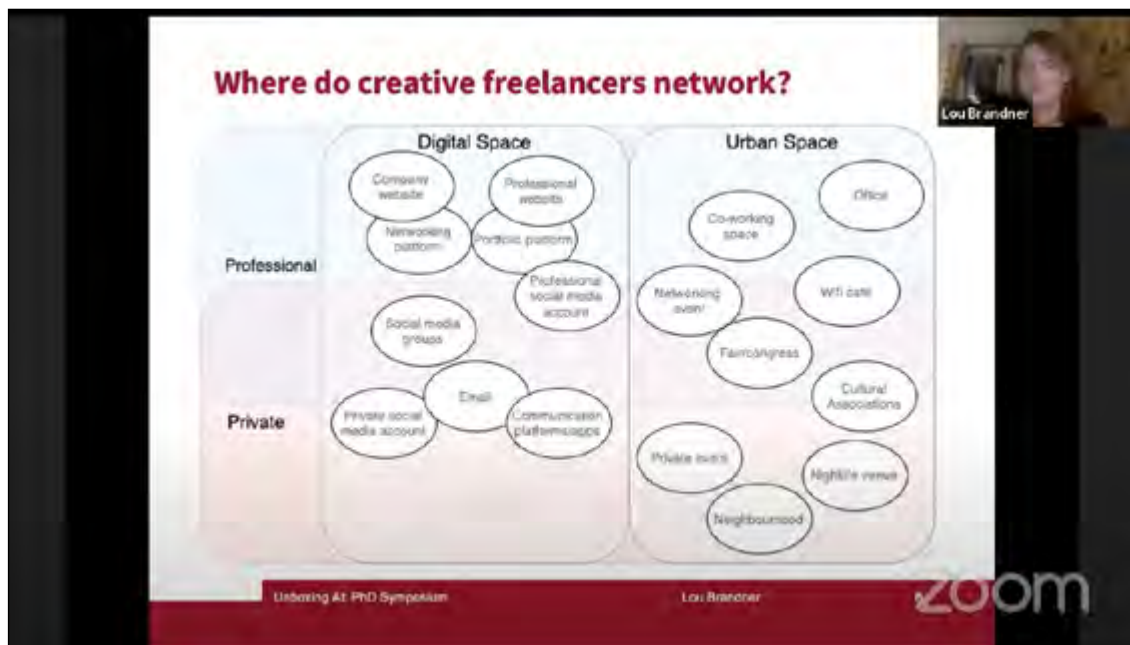




# Chapter 9

## Sociality entangled. Freelance creative labour and digital networking

*Lou Brandner (Sapienza University of Rome)*



### Introduction

The rapid development of the cultural and creative industries (CCI) in the last decades is closely connected to wider economic and social shifts in contemporary capitalism, broadly summarised as the neo-liberalisation of postindustrial economies (Bell, 1972; Harvey, 2005). Regional and national policies have identified the “creative class” (Florida, 2002) as economically valuable, triggering the marketisation and consequently accelerating the growth of the creative sector (Hes-

mondalgh & Pratt, 2005). Given that the CCI are largely powered by the labour of small businesses and freelancers (O'Connor, 2007), these actors find themselves at the core of labour discourses in a networked, digitalised and globalised society. 21st century labour conditions, closely connected to digital technologies, are flexible, temporary and autonomous. An emphasis on self-reliance, informality, flexibility and entrepreneurialism in many ways renders freelance creative workers “pioneers of the new economy”, embodying the new spirit of capitalism (Boltanski & Chiapello, 2005; McRobbie, 2004).

This chapter presents a part of my PhD thesis research, which analyses digital and urban networking practices of creative freelancers in Rome and Berlin. In highly relational and project-based environments, these workers' main way to find employment opportunities and reduce risk are social relationships; this potentially leads to a profound intertwining of private and professional spheres as well as of digital and physical connections. To explore these phenomena, I interviewed creative freelancers in the neighbourhoods of San Lorenzo and Pigneto in Rome as well as Kreuzberg and Neukölln in Berlin. Additionally, their urban surroundings, networks and social media content were analysed. This excerpt will focus on the relationship creative freelancers have with digital platforms regarding networking practices.

## **1. Background: Social capital on digital platforms**

In the absence of stable employment, workers need to rely on their own planning, organisation and skill to secure jobs and therefore their income; individuals become their own structures (Giddens, 1991). Professional success thus depends on qualities such as social behaviour and emotional skills (Chicchi & Roggero, 2009). In artistic labour markets, social contacts for instance facilitate hiring procedures by providing casual recommendations, thus replacing formal application and

evaluation processes: “Those who do not or cannot network are substantially disadvantaged” (Ursell, 2000, p.813). A concept at the centre of this *millieu* is social capital, “the resources created and accessed through relationships” (Grugulis & Stoyanova, 2012, p.1311).

Technology-driven interactions can substitute physical networks, which in working context potentially saves time and money. The rise of mobile devices such as smartphones, smart watches and tablets as well as social media platforms and applications has generated new ways of communicating and networking at a rapid speed. Inside a network sociality as described by Wittel (2001), digital platforms present an essential tool for professional success. Network socialities, particularly prevalent in CCI and project-based labour environments, are deeply embedded in technology, highly individualised and based on an exchange of data. The digital realm is associated more with “bridging” social capital, which expands networks, rather than with “bonding” social capital, which increases cohesion within a community (cf. Putnam, 2000), increasing interpersonal activity and organisational involvement while potentially decreasing commitment and community (Wellman, Haase, Witte & Hampton, 2001).

The internet does not only facilitate creating connections, but also branding and advertising oneself as a creative worker, which in turn helps creating even more contacts. On digital platforms, individuals can build a persona, conveying a certain image both in private and professional contexts. Constructing a brand out of oneself – “self-branding” – has become an explicit form of labour for entrepreneurial success (Gandini, 2015; 2016; Hearn, 2008). A curated online presence, for example on professional websites or social networks, can be utilised to create ties and find clients.

## 2. The curated intimacy of digital networking

Instead of relying on websites specialised on professional networking such as *Linkedin* or on creative work such as *Behance*, most respondents within this study's sample prefer non-specific, large social platforms for networking purposes, specifically *Instagram* and *Facebook*. The majority of respondents are active on both platforms and utilise them in professional and personal contexts. The two spheres most-ly intertwine, with the boundaries between private and job-related content becoming blurred. This is often intentional as curated private insights can be professionally advantageous:

*Actually, it's quite difficult to detach the personal from the professional. Precisely because the audience, the clients, are very interested in the private sphere. That's often the way to hook them up, to make yourself appear more appealing. People are attracted by what I post about my personal stuff.*

Photographer/visual designer, 32, Pigneto

*I try to connect with everyone that I'd like to work with, because Facebook is also somehow a personal space and when you share your personal space with someone, you are already one step ahead. Kind of sharing some intimate things.*

Musician/production manager, 30, San Lorenzo

It is precisely the “private sphere” that potentially attracts clients and collaborators. The respondents consciously utilise personal details to create relationships with their audiences. Private *Facebook* and *Instagram* profiles are used to create a form of carefully crafted intimacy. As described by the second respondent, after meeting potential collaborators personally, connecting on social media becomes a tool to strengthen ties; she strategically shares personal details to advance

relationships. These respondents intentionally deploy private information where necessary to connect on a more personal level with formerly superficial contacts. Contrary to the notion that digital networking creates “bridging” social capital, personalising social media profiles might thus also present a tool to “bond” with clients and collaborators. A second, related dynamic can be observed in professionalising seemingly private profiles:

*If I post something personal, I don't do it publicly. [...] I understood that it's really important what kind of public profile you have on Facebook. People really check it. You see what kind of character, what kind of public figure you are.*

Musician/production manager, 30, San Lorenzo

This strategy does not revolve around adding personal touches to rather work-focused profiles, but around making personal profiles appear more professional in a seemingly casual way. This respondent creates a public persona on her profile that conveys the image she wants potential employers to see. Once a connection is successfully established, they gain access to her private content and therefore the “intimate” details she publishes to strengthen relationships.

*Instagram has the best user activity and is very representative, people love to look at it because you can make little videos of yourself, images, it quickly gives very good insight into a person. You so to say need to professionalise your personal life. You have to show who you are, what you represent, which characters you could play, so that people get an association.*

Actor, 31, Kreuzberg

Creative freelancers need to “show who they are”, give insight into their private lives and personalities on social media to attract clients. Given the influence of private matters on professional success, sepa-

rating the two spheres online becomes impossible. With a large part of freelance recruitment relying on getting people to “like you” (cf. McRobbie, 2002), the respondents need to find a balance between getting their audience to relate to them personally while simultaneously upholding a professional, creative image.

### 3. The idealistic rejection of social media

As opposed to those respondents who embrace digital platforms as spaces where they can share their personalities and create intimacy with their audience, some respondents perceive the digital realm as mutually exclusive with the creation of “authentic” relationships. Asked if she networks digitally, one respondent states:

*I am considering the idea. Because it could be a successful step nowadays, given that people basically don't meet face-to-face anymore. I'm a romantic, I still believe in real connections.*

Architect, 30, San Lorenzo

The respondent generates a dichotomy between real, physical contacts and fake, online contacts. While she recognises the professional value of digital networking, it contradicts her self-characterisation as a “romantic” believing in “real connections”. This attitude is mirrored in other respondents' accounts as well:

*Well, it's not like I think the internet is evil, but I don't really believe in constructing relationships on the internet. It's a bit against the current, but I have made a choice about what I will do and what I won't do. Also in respect to my relationship with the internet and the digital world. I prefer paper, books et cetera. That's my ideal.*

Graphic designer, 31, Pigneto

*Substance and reality are important to me. If you're really interested, you come here. If you only need Instagram, I don't give a damn about you. If you think this is the only way to know me, if that is enough for you, that means you stop at the surface. And I'm not interested in superficial relationships. They're useless, a waste of time.*  
Artist, 35, San Lorenzo

For the first respondent, her preference for tangible things such as books translates into a reluctance to embrace digital platforms to promote her work. The second respondent appears to make little difference between knowing his work and knowing him as a person, merging his profession with his personality; while his quote could be about close, personal friendships, it is in fact about professional connections. Both respondents value face-to-face contact, “substance and reality” over superficial relationships even in professional contexts.

#### **4. Discussion**

As analysed, some respondents reject digital networking altogether, as in their perception it does not create the kind of relationships and social capital they find valuable. Other respondents embrace digital networking specifically as an instrument to bond on a more intimate level with audiences. What both dynamics have in common is that they are deeply connected to the respondents' sense of self and private lives.

Those who reject digital platforms view them as irreconcilable with the creation of real, authentic relationships. They hold highly idealistic views of their professions and professional relationships, desiring “real” connections even for professional purposes and rejecting online contacts as superficial, fake. They favour strong, personal ties, placing particular importance on the quality of the social capital they create.

The rejection of digital technology becomes part of the image these creatives build for themselves; they actively construct their self-identity (cf. Giddens, 1991) around being real, authentic, “romantic” and “against the current”.

For those who embrace digital networking, it precisely serves the function of appearing authentic and “likeable” to clients and collaborators. They consciously display their personalities, opinions and lifestyle to 1) convey an artistic, professional persona and 2) generate a form of curated intimacy. Similarly to how the commodified character of networking events is often concealed (cf. Wittel, 2001), these respondents conceal the networking purpose of their digital profiles with seemingly casual, personal insights. At the same time, they professionalise their image, marketing an entrepreneurial ethos as part of their identity (Bandinelli & Arvidsson, 2012). They perceive their social media presentation and content, even on private-appearing profiles, explicitly as labour and as essential elements of their professional success. Private details are mixed with professional content to mitigate an all-too marketing-oriented, instrumental appearance; “what used to be private or ‘intimate’ information is now becoming a public parameter that can, and is, deployed in evaluating the overall social worth of a person” (Arvidsson & Peitersen, 2009, p.18).

Both perspectives ultimately illustrate how deeply intertwined the personalities and private lives of creative freelancers are with their professional practices, particularly concerning the way they network and create social capital. They accept the potential professional disadvantages of rejecting digital networking if it does not correspond with their personal values. For those who embrace social media, the digital platform becomes a stage of crafted, curated intimacy in an effort to “personalise” online relationships; private and professional spheres become inseparable. Rather than only generating “bridging” social capital to expand networks, digital platforms are increasingly private, intimate



settings, giving potentially more insight into individuals than real-life, physical encounters. The relationship between digital space and social capital appears to be shifting, with social media platforms explicitly serving the purpose of “bonding” with professionally valuable contacts.

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# Chapter 10

## Digital Patronage

*Idil Galip (University of Edinburgh)*



The practice of patronage, or the process of supporting of an individual and/or a work, is one that is ancient and most famously linked with the Renaissance period in western culture. However, patronage has had a widespread impact on politics, material culture, organisation of work and social life not just in pre-industrial Europe (Gundersheimer, 1981, p.3) but also globally. The extensive effects of social and political of patronage in the creation of arts and culture can be observed by casting a cursory glance at the histories of museums, galleries, foundations, and other cultural institutions (Scott-Smith, 2002). These

histories can illuminate the motivations behind patronage as well its wider impact and help us understand how and why culture and art is funded. The sociological exploration of the relations between the patron, the artist and the work is therefore necessary to uncover how artistic and cultural work is organised. This chapter briefly examines what the practice of patronage looks like in the digital age by using an ethnographic case study of countercultural meme creators and how they monetise their content online.

## **1. Patronage**

Traditionally, arts patrons have been wealthy individuals, institutions and firms, like the Medici family (Hope, 1981, p.296-7), the United States government (Scott-Smith, 2002, p. 437-8) and even Nike (Culp, 2018). While private patronage of the arts is still largely maintained by wealthy funders, digital patronage platforms offer a more low-stakes model of patronage to the masses. Platforms, such as Patreon and OnlyFans, become intermediaries connecting the patron to the content creator by way of a system built on monthly subscriptions and tips. If a fan wants to support a freelance creator, they can sign up for a digital patronage platform where they contribute a set amount of money to the creator's monthly income, and in response receive access to exclusive content from the creator in question.

The creator base of these digital patronage platforms is incredibly diverse. The platforms host a range of creative and knowledge workers from podcasters, to curators, educators, musicians, adult film stars and even meme makers offering their services to their patrons. While we might have an innate understanding of what kind of exclusive content that a musician or podcaster might be able to offer their fans, we might not exactly know what a meme maker can offer to a private patron. If memes are user-generated content (Brubacker et al., 2018),

then they must also be free and abundant on the internet, so why pay for one?

## **2. Meme creators as social entrepreneurs**

The answer to this question is nebulous but not incomprehensible. Countercultural niche-meme creators who are active on digital patronage sites organise around specific moral, ethical and political ideals. Concepts of mutual-aid and equal resource distribution are paramount to how they use their digital platforms. For instance, while examining popular niche-meme creators' Instagram pages, I noted that all 18 accounts which I had analysed had published posts, stories and links about mutual-aid projects. Beyond sharing links and volunteering, 6 of them had established their own mutual-aid projects, whether this be a rent reduction union, queer-friendly self-defence training, or prison abolition and harm reduction initiatives. As these creators' work and online presence can often have a strong political tone, they therefore attract an audience who generally share their political and moral views. When asked about why they support meme makers on Patreon, a meme patron who I interviewed remarks "it makes me happy to know that I'm supporting them in some way, and it's a good way to show gratitude to a creator that showcases most of their content for free. The benefits are getting more content from an artist you appreciate, as well as feeling you have served a moral obligation by supporting them."

Niche-meme creators utilise strong elements of social entrepreneurship, by pursuing "more ethical forms of business" (Gandini et al., 2017, p.16). They build social capital in the form of online reputation to expand their network of funders and uphold a certain moral standing within their communities. For instance, creators with large followings will engage in temporary account takeovers and even account

transfers to artists, community and political organisers who may have small followings and may be perceived to be maligned and censored by Instagram's algorithm, which is also referred to as being "shadowbanned" (Myers West, 2018). Account takeovers and transfers are not uncommon digital practices, and can be seen on more commercial pages, where an influencer will take over a company's Instagram page for a few days and exposing their following to said company. Niche-meme creators on the other hand, use this practice to highlight social issues and permanently or temporarily redistribute their most valuable resource, which is online visibility.

However, the relationship between niche-meme creators, entrepreneurialism and platforms is fraught. As individuals who generally embrace anti-capitalist politics, practices, and a countercultural outlook, they often see their active involvement in and engagement with "platform capitalism" (Srnicsek, 2017) to be paradoxical. Therefore, the discrepancy between their personal politics and dependence on platforms to make money and promote their work, becomes a point of contention, resistance, and dialogue. The individualisation of responsibility for such discrepancies and paradoxes are bolstered by a neoliberal perspective of accountability, where individuals are held up to unattainable standards of ethical business practices whereas large corporations, such as Instagram, are given a pass. The burden of having to surrender part of your ethical principles for the sake of survival are put on the shoulders of precarious workers, creating an increasingly confusing and anxious existence.

### **3. Digital patronage platforms**

Countercultural niche-meme creators are diversified workers (Gandini, 2016, p. 18) who use multiple platforms and income streams to make a living. As diversified workers they have a diverse portfolio and

offer a wide range of art, products, and services. Based on the Patreon accounts I have analysed, niche-meme creators provide products and services that go beyond personalised memes. They might offer their patrons literature, such as essays, poetry, and zines, physical artwork such as prints, stickers and jewellery or digital intimacy which might take the form of advice and emotional support through email, being added to their Instagram close friends lists and Discord servers, shout-outs on their Instagram stories, and so on. The list is highly varied and spread across multiple platforms. Creators sell products, merchandise, and physical artworks for instance, over e-commerce websites and platforms such as Threadless, Big Cartel, eBay, Etsy and even AliExpress. This is more straight-forward and the kind of monetisation that users might be more familiar with. In contrast, creators tend to offer more intangible services such as advice and digital intimacy over digital patronage platforms, like Patreon and OnlyFans.

To attract creators, digital patronage platforms use the promise of creative independence, not only from institutions, and the perils of freelance work, but also from algorithmic chance and control. On Patreon's "For Creators" section, a visual artist is told that they shouldn't "rely on algorithms & chance" or "on unpredictable revenue streams" and instead "change the way art is valued" (Patreon, 2020a, 2020b). However, the independence and control that this platform argues that it provides to creators is unequally distributed and dependent on their three pricing plans called Lite, Pro and Premium. Patreon takes a commission of the creator's monthly Patreon earnings, and the percentage varies depending on which pricing plan the creator is on. The higher a percentage of your monthly income you relinquish to the platform, the more control you have over analytics and platform features. Therefore, if you choose to keep 95 percent of your monthly earnings, you still end up having to rely on "algorithms & chance" (Patreon, 2020a).

#### 4. Digital labour and patronage relationships

These digital patronage platforms bring a new dimension to definitions of digital labour and free labour (Terranova, 2000), (Gandini 2020). In the case of countercultural niche-meme creators, digital patronage platforms facilitate a market where so called “prosumers” find willing patrons for their “user generated content”. This signifies an attempt on the prosumers’ part to monetise their digital labour. Here, the relationship between the user and the platform is not clear cut. These niche meme-makers are hyperaware of the value of the memes, engagement and overall online presence on various platforms and seek to somehow remedy this loss. Their attention is turned inward towards their communities and through an inward politics, they attempt to resist algorithms, chance and platforms. Instead of chasing a pipe-dream of being remunerated by Instagram for their user generated content, they rely on their community’s ethical principles, political affinities and financial support in the form of digital patronage. However, the monetisation of their free content still requires for the creation of additional, special content and potentially more unpaid hours. Their success is based on the shaky and incessantly fluctuating social grounds of being relevant, ethical, and productive. Digital patronage platforms offer some revenue for precarious workers and a chance to monetise existent content. For the most part however, these platforms still require consistent attention and new content creation. They tease their customers with the possibility of freelance success through the use of their omniscient analytics, provided their customers promise them a cut of their meagre earnings. Finally, the process of redefining “the way art is valued” (Patreon 2020b) is arbitrated by a middleman in the form of a digital platform and through a monthly subscription. Among the World Economic Forum’s eight predictions for the world in 2030, one was that “all products will have become services” (Parker, 2016). It can



be argued that digital patronage platforms will further accelerate this transition by connecting borrower-patrons and lender-creators.

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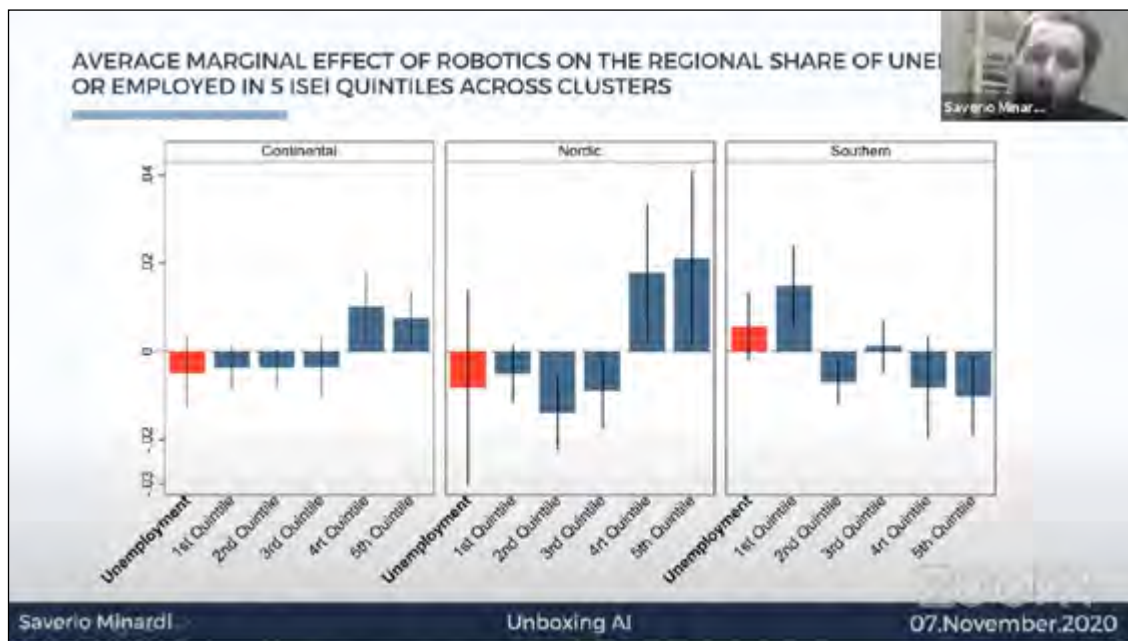
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# Chapter 11

## Industrial Robotics and Changing Occupational Structures across Europe

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In the past thirty years, socio-economic research has documented major processes of occupational polarisation or occupational upgrading in almost every industrialized economy, in terms of both income distribution and distribution of jobs. The most critical aspect behind these long-term cycles has increasingly been accepted as technological change (Acemoglu & Autor, 2011; Goos et al., 2009; Oesch & Menés, 2011; Oesch & Piccitto, 2019).

The main mechanism connecting growing technological capabilities and changing employment structure was related to the ability of technology to replace routine tasks concentrated in the middle and bottom of the occupational structure, and complement abstract cognitive ones typical of higher-level occupations (Autor et al., 2003; Spitz-Oener, 2006).

One of the issues with a task-based perspective is that it finds the relationship between technological progress and the structure of the labor market to be extremely deterministic and primarily related to machinery's technical capability (Bailey & Leonardi, 2015). However, automation processes do not take place in a vacuum; rather they are rooted in historically defined national institution arrangements and distribution of power.

By analysing the implementation of industrial robotics across Western European countries from 1997 to 2017, we investigate the heterogeneous relationship between automation, job composition, and class structure, in order to illustrate the significance of cross-country contextual differences in mediating the effects of robotisation. Our findings indicate that the relationship between automation and work, far from being a deterministic process, is influenced by the particular structural context in which technology is applied.

## **1. Technology and occupational structure**

Early socio-economic research suggested that the process of technological change that started in the 1970s was essentially “skill-biased,” rising the incentive and demand for highly trained jobs and consequently contributing to an upgrading of occupational structures (Acemoglu & Autor, 2011; Bresnahan et al., 2002; Goldin & Katz, 2007). This perspective expects that an increase in automating technologies will lead to a rise in demand for highly trained employees which could

in turn, lead to an overall improvement of the job hierarchy by moving positions from low-level, routine-intensive occupations to high-level, knowledge-intensive ones

Socio-economic analysis has been swift to find out that the theory of Skilled-Biased Technological was unable to account for the empirical observation of polarizing trend in both earnings and occupational structures in the first decade of the 21st century, a modification of the SBTC change hypothesis was thus advanced, namely the theory of Routine biased technological change (RBTC) (Acemoglu & Autor, 2011; Levy & Murnane, 2012).

RBTC claims that innovations adopted in recent decades have acted as good replacements for clear and codifiable “routine task”—meaning tasks that can be accomplished by machine following explicit and codified rules—typical of white and blue-collars jobs. On the other hand, the same technologies worked as complement to the performance of non-routine analytical and/or interpersonal tasks mainly performed in occupation at the top of the occupational structure. However, RBTC further suggested that a number of lower-level occupations were characterized by a high content of non-routine manual tasks for which the possibility for automation was still limited. The expected result was a process of occupational polarization across political economies at similar levels of industrialization.

## **2. Technology and institutions**

One of the crucial limits of a task-based perspective is that it often conceptualises the outcome of automation as a purely technically driven. Indeed, connecting the introduction of labour-replacing technologies with labour market outcomes through mechanisms based solely on the technical capabilities (and related price) of machinery goes hand in hand with assuming a functionalist perspective based on the ineluc-

tability of industrialism and modernisation as opposed to the “political economy of capitalism” and thus disregards important contextual and institutional factors which shape the ultimate outcome of every process of technological change.

In this regard, a key development of the last decades was the formulation of neo-institutionalist theories, which claimed that capitalist societies can be distinguished by very diverse institutional systems, each favouring different forms of work and production strategies (Estevez-Abe et al., 2001; Gallie, 1991; Peter A. Hall & Soskice, 2001; Thelen, 2001). At the heart of these theories was the idea that historically established institutional arrangements create a number of constraints and incentives for firms in various political economies to take up different production strategies, leading to diverse demand for high or low skilled labor.

Institution’s domains such as the type of vocational training systems, the degree of labour market dualization, and systems of industrial relations, among others, have the potential to strongly influence firms restructuring strategies in response to changing technological opportunities, eventually leading to diverse outcomes across well-established institutional systems.

### **3. Method**

In order to investigate the heterogeneous relation between technological change and occupational structures we perform a regional level analysis connecting an indicator of regional exposure to industrial robotics to indicators of employment, occupational level, occupational-class composition, and tasks performed, across institutional regimes. We used 50 nuts-1 European regions from 10 European countries observed over 21 years, exploiting longitudinal dimension of the data and applying regional-level fixed-effects models. In this

way, we are able to control for time-constant unobserved heterogeneity at regional and level. Microdata came from the EU-LFS from 1997 to 2017. Task indices were created using O\*Net 3.0, and information on the adoption of robots was taken from the International Federation of Robotics. To investigate the heterogeneous relation across contexts, we interacted each independent variable with dichotomous variables indicating one of three theoretically defined institutional regimes to which each region belonged: Nordic, Continental, and Southern European (Gallie, 2011). Unfortunately, it was impossible to analyse the Liberal regime (the U.K. and Ireland), since these countries had no variation in use of industrial robots in the period analysed.

#### 4. Results

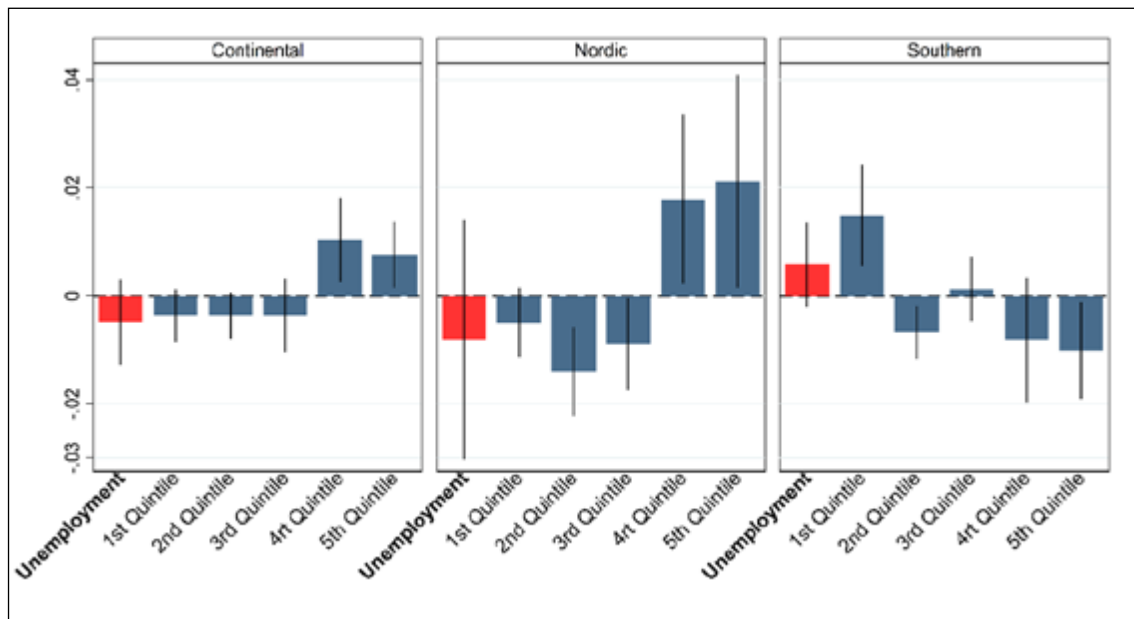


Figure 1 – Average marginal effect of regional robotics exposure on the regional unemployment level and the share of workers employed in five ISEI\* quintiles across institutional regimes. *Note: results from a fixed-effect model with clustered standard errors at the regional level. Time varying controls include, the regional youth unemployment rate*

*and regional share of tertiary educated active population. Occupational quintiles are defined by ranking 3-digits ISCO-88 occupations based on their ISEI Score. (\*International Socio-Economic Index)*

Figure 1 reports the estimated average marginal effect of robotics on the regional unemployment rate (red bars) and the share of workers employed in five different occupational quintiles defined by their International Socio-Economic Index score (Ganzeboom & Treiman, 1996) (blue bars). Results are consistent in terms of regional tasks composition (with tasks defined the approach of Acemoglu and Autor (2011) and distribution of workers across categories of the European Socio-economic Classification (Rose & Harrison, 2007).

Results highlight three distinct patterns of automation related occupational change, suggesting that, far from being a deterministic process, the ultimate impact of technological change is mediated by the institutional system in which automation is embedded.

Three separate “worlds of technological innovation” appear, with a trend of upgrading taking place in Northern and Continental European countries, where the share of employed in higher level occupation increase while middle and low are diminishing. The opposite is true in the Southern European context, where robotics is associated with a reduction in the share of people working in the upper occupations and increase in the bottom.

Results, thus, call into question a deterministic understanding of technological change suggesting that, in order to fully grasp the transitions at place we must first consider the various contextual conditions in which the introduction of technology is embedded.



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# Chapter 12

## Data Workers in India: A Case for Labour Standards in the Governance of Data and Artificial Intelligence

*Kai-Hsin Hung (HEC Montreal)*

9:35 am

Work Hours & Pay

Biometric scan to record arrival  
+9 hour work day; 6 days a week

Strict 9:30 am arrival policy  
Daily pay deducted by half

|       |    |         |
|-------|----|---------|
| F     | 26 | Rs 9370 |
| M     | 70 | Rs 9300 |
| Total | 96 | Rs 9320 |

zoom

### 1. Demystifying the Spectacle of Innovation

“Data runs the world, but what fuels it?” was written across the mezzanine of a metro station in Bangalore – India’s global IT and outsourcing hub. This question can guide us as we interrogate how value is created and assigned across the global data value chain, where hu-

man labour creates the valuable datasets necessary to train machine learning (ML) models.

Governance and regulatory vacuums worldwide have permitted “the spectacle of innovation to conceal the worker” and deceptively made workers immaterial (Scholz, 2015). Data work intermediation and outsourcing behaviours are based on regulatory arbitrage – the practice of operating in one jurisdiction to circumvent less favorable regulations elsewhere (Prassl, 2018). Human data workers in India and elsewhere annotate, classify, train, verify, and imitate much of the data from our digital life when algorithms fail to do the job (Gray & Suri, 2019; Schmidt, 2019; Tubaro et al., 2020). Data-intensive services, such as data processing have expanded in the Global South to help convert raw and unstructured data through a series of steps into actionable insights and digital intelligence (GSMA, 2018; Hung, 2020; Miller & Mork, 2013). This exploratory research asks whether the work done by data workers building the datasets that are fueling advancements in artificial intelligence is decent<sup>1</sup> and when it is an unacceptable form of work.<sup>2</sup>

We focus on an Informational Technology enabled Services (ITeS) business process outsourcing (BPO) data processing firm as our case study that has 220 employees in rural Andhra Pradesh, India. Case selection was made from pre-screening a list of 50 Indian data firms and platforms identified by Kathuria et al. (2017). For this firm, over 70 percent of their business operations are in data processing and annotation for ML in the agriculture, transportation, insurance, risk

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- 1 Decent work is the antithesis of unacceptable forms of work (UFW), decent work promotes the productive work in conditions of freedom, quality, security and human dignity through the promotion of rights at work, employment, social protection, and social dialogue.
  - 2 Comprises conditions that *deny fundamental principles and rights at work*, put at risk the lives, health, freedom, human dignity, and security of workers or keep households in conditions of poverty.

assessment, medical and government sectors, or social media and e-commerce platforms for global clients. Our findings were derived from 96 survey responses and 14 semi-structured interviews that were collected in 2019 at the data processing firm. Here, we present a truncated summary of our findings. Research ethics for this research was reviewed independently by the International Development Research Centre (IDRC). To critically assess the work and living conditions of these workers, we adopt two frameworks. First, we assess the five principles of 1) pay, 2) conditions, 3) contracts, 4) management, and 5) representation as identified by the Fairwork Foundation (2019) (Graham & Woodcock, 2017). We complement these principles with an analysis of the Multidimensional Model of Unacceptable Forms of Work (UFW), a socio-legal diagnostic tool based on international labour standards (McCann & Fudge, 2017).

Based on our findings in the specific context detailed, we deem data workers as vulnerable workers. This signifier has important implications for furthering actions around domestic and international labour standards and business norms. Our findings align with those of Casilli, (2019), Gray & Suri (2019) and Roberts (2019) and we contend that these data-intensive services are indeed labour intensive. The quality and the conditions of this form of data work is pertinent to the wider discussion around the governance and deployment of responsible artificial intelligence, and how AI's global data value chains must respect the universality of rights. More broadly, we argue that new technology-enabled business models and choices must disallow technological circumvention of labour standards.

## 2. The Demand for High-Quality Training Data: Its Global Value Chain and Production

One of the critical bottlenecks to broaden the deployment of ML models and artificial intelligence is the need for “large volumes of high-quality training data” (Amazon Web Services, 2019; Chui et al., 2015). To solve this bottleneck, data-intensive services and crowdwork platforms were created. These platforms were “born out of the failures of artificial intelligence to meet the needs of internet companies seeking to expand the domain of the data they could store, classify and serve up online” (Irani, 2015, Pg. 225). India is the largest supplier of digital labour, including data workers comprising 24 percent of the online labour market (Lehdonvirta, 2017). India’s economic liberalization in the 1990s, coupled with an abundant labour supply that is skilled, English-speaking, affordable, and largely unorganized fueled a tech boom. The IT business process outsourcing (BPO) sector, like India’s call centers and knowledge process outsourcing (KPOs), has been credited for the rise of the Indian middle class (Nicholson et al., 2018; Kathuria et al., 2017).

The organizational structure and the business processes at the firm mirror that of other IT-enabled services (ITeS) and Third-Party Service Providers (TPSPs), such as call centres (Krishnamurthy, 2018). Like other TPSPs, each client-linked data project in the firm is called a “process” that is assigned to a team. At times, platforms will outsource to TPSPs. On site, a Team Leader (TL) supervises workers working on a process. Each worker is also referred to as a “resource” by management that could be allocated and reassembled to meet production demands. The most frequently listed work title noted was the Data Processing Analyst and to a lesser extent, Data Entry Operator.

| Job Title                            | Main Tasks  | Monthly           | USD          |
|--------------------------------------|---|-------------------|--------------|
| Team Leaders<br>(n = 4)              | Ensuring the daily production targets are met, oversight of team members, attend daily Team Leaders meetings, email communications, quality assurance (QA) of projects, data annotation and transcription work. | <b>Rs. 13,670</b> | <b>\$200</b> |
| Data Processing Analysts<br>(n = 58) | Annotating data, video editing, classify content, and conducting other tasks like sentiment analysis, web searches, and continuous quality assurance (QA).  | <b>Rs. 9,040</b>  | <b>\$130</b> |
| Data Entry Operators<br>(n = 5)      | Monitoring reports on Clockify – a work time-tracking software, data entry, and quality assurance (QA) of human judgments.  | <b>Rs. 9,140</b>  | <b>\$133</b> |

The firm's clients are in the United States, Canada, Europe, China, Brazil, and India. Data annotation and other data value-added sector associated with global ML systems is worth an estimated "USD\$ 45 billion worth of work available globally. This may increase to USD\$ 72 billion dollars in the next couple of years" shared (10). At the time of this research, at full capacity, this data processing firm offered 1,700 hours of work each day, and approximately 70 percent of these hours or 1,200 hours were dedicated to the processing of data to build datasets for training ML models.

Workers also reported that they do not know who their clients are but may know where they might be through the data they work on. "We don't know for which company we work [for], but it is known that we work on California. We get data related to California." (3). Workers have limited information about the clients only through their login interface client tools, which is common for Facebook, Amazon, Figure 8, and others. "We will work on the platform that has been created by our clients. Just by login, we will start out work. We do



not assign any work; our client assigns them. We just come login and work” (11).

### **3. A Profile of Human Data Workers**

Due to the data processing outsourcing firm being located in a rural region, they have access to a large, educated, unemployed, and young talent pool between the ages of 18-25 (70 percent of respondents), most of whom have a university degree (85 percent of respondents). Many workers noted that they want to be with their family or have care responsibilities, such as looking after their parents. These demographic and social patterns are similar to the data seen in the call centers in urban centers (Krishnamurthy, 2018). Many workers also reported that they had short stints in nearby metropolises like Hyderabad or Bangalore for employment purposes before returning. The high cost of living in major urban centers was also a pull factor to stay in the town where many grew up.

For female workers, the firm has over a decade of building trust and has a positive reputation with families in the community and negotiated a gender social contract that was locally relevant. This has permitted daughters and wives in a predominantly patriarchal and rural community to have the empowered choice to become ‘good’ workers and transition into the labour market. Female respondents represented 27 percent of all respondents and half of our interviewees.

## **4. Working Realities in Data Processing in Rural India**

### **4.1 Income and Pay**

Over half of the survey respondents reported that their pay was inadequate, which means their salaries do not satisfy their basic daily

needs, and separately, their family's basic daily needs. It was found that the employer never or seldom pays workers for overtime work. Triangulating across six survey indicators, all interviewees voiced dissatisfaction regarding their pay, and these shared views were held by both employees and management saying that "what we are paying is not right" (11), workers "do not have proper pay or salaries" (10) to maintain quality deliverables. The average monthly pay reported by all the respondents was Rs. 9,320 in July 2019. The range of all reported monthly pay was between Rs. 8,000 to Rs. 16,000. This range is about 50 percent less than the same work in urban settings, which is between Rs. 15,000-30,000 a month in starting salary (Joshi, 2019). According to the Periodic Labour Force Survey (PLFS) (Economic Times, 2019) data, over half of the formal workers, like the one at this data processing firm, earned less than Rs. 10,000 per month in rural areas.

## **4.2 Working Conditions**

Issues of working hours and pay are intrinsically linked and critical to examining one's working conditions. When looking at the working time, issues of excessive overtime work hours and insufficient leisure time were highlighted. There are also strong signs of work intensification resulting in higher stress levels. Over two-thirds of respondents shared that they work over 48 hours per week, which also corresponds with 62 percent of respondents reporting that they work over 9 hours a day all the time or most of the time. To meet the daily production targets, "we need to reach the target, and each target we have is assigned points. If you score more points you would get an extra of Rs. 2,000 for that month. We get Rs. 9,000 as pay per month, but after deductions, it is Rs. 8,300" (1). Salary deductions as a form of disciplinary and control mechanism over workers' autonomy were also reported by multiple interviewees. The data suggest that day shift workers were required to arrive at work on time at the latest by 9:30

AM. If a worker is more than one minute late, their pay for that day will be cut by half. The data also revealed that any incentive pay in salaries was countered by salary deductions. There was also severe worker surveillance practiced due to performance targets and client requirements, like data protection.

### **4.3 Contract, Management, & Representation**

Most workers did sign a work contract detailing their terms of employment. They are in a formal standard employment relationship. Workers have access to the national Employee's State Insurance (ESI), and most have access to state programs like the Employee's Provident Fund, Arogyasri Health Care, and Below Poverty Line (BPL) Ration Card. Training and skills development opportunities were reported by two-thirds of respondents. However, there was a mixed understanding of the human resources policies and procedures to mediate employment relations. Over two-thirds indicated that they were aware of processes to appeal disciplinary procedures and termination. Few were aware of the existence of an Internal Complaints Committee (ICC), or an internal sexual harassment redressal policy and its related review committee as mandated by the Sexual Harassment of Women at Workplace Act, 2013. Interestingly, a fifth shared that they did file at least one complaint or dispute to management in the last 12 months. However, no complaints were registered by management. When it comes to worker representation and voice, there appeared to be high ambiguity regarding workers' freedom of association and right to organize. Worker representation and collective bargaining does not formally exist. Trade unions and representation in the IT and ITeS sector are low, and these sectors are exempt from various labour laws, including the inapplicability of the Industrial Employment Standing Orders Act, 1946.

## 5. Labour Rights and Governance Across the Global Data Value Chain

Based on our findings, these data workers in India should be deemed as vulnerable workers. This work is not decent work. Their earnings were fragile, with minimal social protection. Workers were poorly paid, and the employer is financially punitive with forced overtime and disciplinary measures. Also, they had limited awareness and access to legal protections and rights at work. Exceptionally, workers in our case study were not necessarily precarious nor performing a nonstandard form of work but they remain at risk of facing poverty and injustice given the context and the employer's efforts. Workers reported that they could better meet their care and family responsibilities, transition into the world of work, have more financial independence for women and youth, and increased in material well-being and standard of living. All things considered, these findings continue to reflect the low-end, labour cost, and regulatory arbitrage experienced by many workers in global value chains of the garment and IT and ITeS BPOs sectors (Gereffi et al., 2011; Noronha & D'Cruz, 2016).

Permissive regulatory and global competition regimes have long abided and incentivized certain firm behaviours and strategies across the data value chain from clients, AI vendors, intermediaries to end-users, and between data, cloud, and intelligence layers (Singh, 2020). To attract and maintain its position as a global IT outsourcing hub, India and its subnational governments enact non-fiscal incentives that exempt the inspections and certifications under various Acts and Rules for its IT and ITeS sector (Krishnamurthy, 2018). Hence, due to these exemptions like the inapplicability of the Industrial Employment Standing Orders Act, 1946, Payment of Wages Act, 1936, and Minimum Wages Act, 1948 - no domestic labour laws were violated. These state accommodations shaped and are reshaping the boundaries and

behaviours of actors and choices in our cyber-physical and geoeconomic configurations that for decades had largely made powerful actors immune to accountability (Berg et al., 2018; Roberts, 2019).

Normatively and based on our findings, these data workers still work in vulnerable conditions with low protection. Going forward, it is uncertain how the 2019 labour reforms in India will address the major imbalances in accountability, justice, and trade-offs in the context of COVID-19 pandemic disruptions and Slowbalization. More broadly, the quality of work, labour, and employment dimensions in the digital economy are integral to the human-centered values and universality of rights in the deployment and governance of responsible artificial intelligence and its global data value chains. Business models and choices further enabled by new technologies by design need to be human rights-respecting, accountable, and disallow the continuation of technological circumvention of labour standards and protections amplifying the downward race of global regulatory arbitrage.

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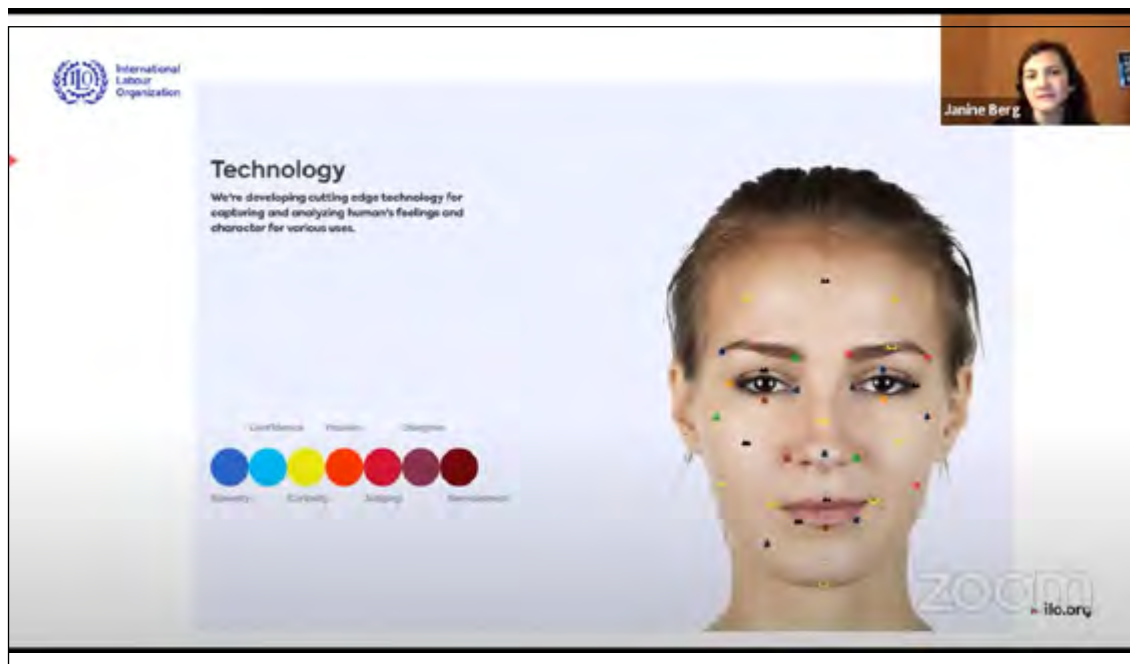


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# Chapter 13

## Automation and Artificial Intelligence at work: the growth in precariousness

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Debates on the future of work have focused far too much attention on possible job losses (Frey and Osborne, 2017) to the detriment of discussions on the effects on job quality and workers' rights. Yet it is important to address job quality in debates on technology and work, as automation and artificial intelligence have expedited a decades-long trend of shifting risk onto workers through outsourcing and the use of other precarious forms of employment.

Thus, it can be argued that the technological revolution is displacing labour rather than replacing it, to the detriment of workers. In most cases, this has resulted in a growth of precarious, low-quality jobs. In other words, we are not facing a technological problem, but a policy challenge. The recent success of Prop. 22 in California, that allows gig economy companies not to provide the same rights as employees as the result of extensive lobbying on the part of gig companies, is telling.

In this summary, we address how automation and artificial intelligence at work contribute to the expansion of employment's peripheries and the worsening of job quality. We also draw on two other trends, the fissuration of work and the Covid-19 crisis, to discuss the increasing demand of virtual work. In the last part of this chapter, we discuss possible policy solutions and advocate for the need to rethink and restructure labour markets so that they better reflect the needs and realities of 21st society.

## **1. The expansion of employment's peripheries**

In an article, Janine Berg (2019) argues that labour is being diffused to the periphery of the labour hierarchy, away from standard full-time employment with one employer and with protections guaranteed by labour law and collective agreements (core forms of work). There has been a growth of non-standard employment through the use of atypical contracts (temporary work, agency work) and more recently, through the platformization of the economy. Depending on specific countries' regulatory system, companies use various forms of non-standard employment status, like the "micro-entrepreneur" status in France or zero-hours contracts in the United Kingdom. At the outermost ring is unpaid labour, which mostly consists of unpaid reproductive tasks such as care and domestic responsibilities. More recently, however, with technological changes, unpaid labour has come

to include what the scholars Hamid Ekbia and Bonni Nardi refer to as “heteromated labour”. Ekbia and Nardi (2018) define heteromated labour as “the extraction of economic value from low-cost or free labour in computer mediated networks” and describe how technological systems have been designed to extract unpaid or extremely low-paid labour with ReCaptcha being a quintessential example. With this unpaid labour, the work has not disappeared, it is just not paid.

## **2. From fissurization of work to virtual outsourcing**

Accompanying these trends is the “fissurization” or outsourcing of work. David Weil, in his book, *The Fissured Workplace* (2014), documents the myriad of industries that “fissured” key functions of their businesses, such as major hotel chains that outsourced front-desk services and cleaning to third-party management companies, and the telecommunications companies that subcontracted installation and home-repair services to legions of “self-employed” workers. Technology has furthered this trend by facilitating outsourcing across borders in the form of “virtual outsourcing”. Previously untradable service jobs are now parsed and placed on web-based, digital labour platforms where the task is performed by workers located on the opposite end of the world. In a survey conducted by the ILO on five leading English-language microtask platforms, workers were spread across 75 countries of the world (Berg et al., 2018).

More recently, a survey in the Philippines on home-based work revealed how many workers were working on virtual assistants’ platforms (King-Dejardin, forthcoming). These administrative assistants are working for entrepreneurs or companies situated in Australia and in the USA. These were previously untradeable activities as they involved the presence of workers and their employers, are now performed by distance locations using technological tools. The study

noted several organizational and digital problems, specifically, how workers are classified as independent contractors, but have set working hours with set breaks. The workers are also required to download time tracking management system that take random screenshots. This example shows how technology is displacing work from standard to non-standard forms of employment (periphery) and from co-presence to distance work.

### **3. Covid-19 and the great working from home experiment**

The recent Covid-19 pandemic and the subsequent lockdowns resulted in a surge of workers teleworking, increasing by 30 percent in Europe and the USA. There are certainly benefits of teleworking for workers and preliminary information indicates that employers are largely pleased with the experiment, as many workers have extended their working day working from home (Barrero et al., 2020). In the future, we could expect a rise of teleworking, but also of outsourcing to freelancers or platform workers as companies realize the benefits and ease of virtual outsourcing. Although this issue will need more research in the future, there is preliminary evidence to support this hypothesis. For example, in a recent article on platforms' supply and demand of work on the Online Labour Index, Fabien Stephany and colleagues (2020) showed that, in the USA, "tech jobs" such as web development benefit from a "distancing bonus" indicating a significant increase of online labour demand for these activities. As outsourcing expands, companies will have to find new ways of monitoring and controlling work processes, and may turn to greater use of digital tracking tools.

#### 4. Technology at work and job quality

Technology doesn't just affect the organization of work, but also the quality of work. There have been several important contributions to the understanding of the multi-dimensionality of job quality, such as the work of Janine Leschke, Andrew Watt and Mairéad Finn (2008) on the construction of a "European Job Quality Index". Eurofound (2012) has in its work as analysed work conditions through different variables of job quality. Their job quality index looks at all different dimensions that affect workers (physical and social environment, work intensity, etc.) and highlights how different dimensions heighten or mitigate risk. For instance, if you have high levels of work intensity at work, but strong managerial and social support, you are more able to handle the pressures at work and have better job quality; however, if you do not have these positive support structures, your job quality will worsen. For this reason, the multidimensionality of job quality is important to consider.

There are positive aspects of technology especially for physical work, but technological changes can also lead to increase control and less social support, as we see with algorithmic management. This new way of managing workers involves the continuous tracking of workers, a constant performance evaluation, the implementation of decisions without human intervention; workers communicate with a system rather than humans and this hinders transparency, notably on decision-making criteria (Möhlmann and Lior Zalmanson, 2017).

In research on the working conditions of digital labour platforms, we can see the negative effects of algorithmic management as workers encounter bugs in tasks assigned to them or unclear instructions, but do not have a manager or colleague that they can turn to when they face such problems (Berg et al., 2018). Another example of how algorithmic management can worsen working conditions can be seen

in the case of Ann Taylor, a clothing company that implemented a workforce management system or a scheduling system called ATLAS. Before the installation of the system, if workers wanted to take a day-off they talked with their managers, who were more likely to be accommodating. With the ATLAS system, workers' schedule is managed digitally on the basis of expectations of sales and other variables, which leave the workers with fewer possibilities to negotiate with a human manager. Indeed, the system is also meant to keep managers away from employee management as one manager said: "[ATLAS] gives personality to the system...so that [employees] hate the system and not us". Algorithmic management is also used for recruitment, for scheduling, for supervision and for dismissal.

Other examples of technology at work include the use of recruitment tools to screen job applications during the first stage of an interview process. In addition, technology is used to hide forms of discipline. Niels Van Doorn (2018) analyzed how the cleaning platform Handy is designed to exert control on workers. The platform charges penalties to workers in order to maintain discipline: if you cancel a job, you will be charged 10 \$; if you miss a job, it will be 50\$. As he said, "Handy effectively updates a system of debt peonage whose terms and conditions it can modify unilaterally, suddenly, and without any substantive form of appeal— save for private arbitration". What is at stake here, is that this situation has nothing to do with technology, but with precarious contracts offered by platforms without minimum wages and other labour protections, hidden behind the veil of technological systems.

Yet, this kind of employee monitoring is not a new phenomenon, even if platforms accelerated this trend. Indeed, Ursula Huws (1984) already mentioned home-based clerical employees working on machines that could monitor keystrokes per minute or the number of commands executed and error rates. In France, those machines were

referred to as “spies”. In a study conducted by Mariya Aleksynska, Anastasia Bastrakova and Natalia Kharchenko for the ILO (2018) on 1000 workers on digital labour platforms in Ukraine, the authors found that 27% of workers needed to provide screenshots or have installed software to monitor their work (measuring keystrokes, taking random screenshots), that 36% of clients request availability during certain hours, that 21% request availability outside usual hours. In addition, 85% of workers had paid a commission to the platform in order to work.

For the moment, there are scarce examples of collective agreements or unions who have been able to address these new forms of management. Rather, “data-driven software and algorithmic decision making act as a force multiplier for the power held by firms, with no balancing agent on the side of workers” (Adler-Belle and Miller, 2018). At the same time, we are confronting these new challenges without having resolved long-standing labour issues such as the lack of valuation of women’s work in the home and the historical exclusion of many workers from labour protections (especially agricultural or domestic workers). As such, this link to the problems of the past reaffirms the need to find means of regulation to protect all workers.

## **5. Regulatory pathways**

The debate on digital platforms has centred around the question of whether or not these workers are employees or independent contractors according to national law. As a result, gig companies have designed their contracts to avoid having the workers be classified as employees. But rather than trying to determine who is an employee or not, societies should rather be focusing on which protections everybody needs to be having. From this point of view, it is important to be reminded that “The concept of the employee is a legal construct.



We do not find out who or what an employee is. It is open for us as a society to decide” (Davidov, 2006). As a consequence, the main question is how to make jobs better and what legislative responses, collective responses and policies are needed to support workers.

Nevertheless, for online digital platforms this is less straightforward as there would be a need for international regulation that can tackle what has become a “planetary labour market” (Graham and Amir, 2019), with platforms, clients and workers spread across the world. For the moment, most of the regulatory attempts are focused on national labour market and jurisdictions, as regulating across borders is not straightforward from a legal perspective and highly problematic from a political perspective. Many countries see those platforms positively because they provide jobs for their citizens or because some of them earn more than what they would have in the local labour market. Yet, as they are independent contractors they have no other labour protections.

There is much to be done and several solutions are needed. But we should also explore the role of technology in addressing some of these challenges, as the same tools that monitor workers have the potential to inform us about working conditions. For instance, tools such as GPS can monitor working hours. In a way, all the data we need to control platforms’ work conditions are already here. Therefore, an important pillar of platforms’ regulation is making those data available to workers, unions and regulators. For instance, Paul-Olivier Dehaye, through his association called [personaldata.io](https://personaldata.io), help Uber drivers retrieve their data, which can support their legal cases. There is also the example of New York City Taxi and Limousine Commission which required the platforms to turn over four weeks of driver data in order to establish a minimum wage for app-based drivers. With that data, they were able to calculate and to implement a fair wage.

## Conclusion

Debates on the future of work have focused far too much attention on possible job losses, ignoring the deterioration in job quality experienced by many of the worlds' workers. The organizational changes brought on by globalization and facilitated by technological advances have resulted in the emergence of more precarious forms of employment. We see this clearly in the development and use of digital labour platforms that have facilitated cross-border labour provision and instituted new forms of worker control. Labour regulation has lagged behind on these transformations, exposing gaps in coverage and exacerbating insecurity and inequality.

It is therefore time to re-focus these debates on how to lessen precariousness in the labour market, and develop strategies for ensuring that all workers benefit from the basic labour protections enshrined in labour law. Ultimately, we must remember that the labour market is a social institution and that is up to societies to decide about the labour and social protections that are given to workers. This not a technological debate, it is a political one.

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