



INVISIBLE LABOR: WORK UNDER THE DIGITAL REGIME OF REPRESENTATION

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ABSTRACT | The digital turn seems to correlate with a crisis in representation: digitalization widens the gap between phenomenological experience and the socio-economic logic that determines it, rendering certain areas, fields or aspects of the world invisible. Crucially, this logic – according to Mary L. Gray, author of *Ghost Work* – entails the restructuring, and arguably the dismantling, of formal employment, producing its own set of novel social relations. Addressing the question of the hidden labor underpinning the digital economy could be described as an exercise in making it visible. But work is not the only social category whose tangibility, or lack thereof, revolves around a specific regime of visibility. The category ‘art’ in Western modernity could be construed as designating the alienation of artistic labor from other forms of labor. Because creativity is seen as the opposite of work, the dividing line between work and non-work correlates with the division between art and non-art, and it is thus impossible to fundamentally alter the former without implicating the latter.

KEYWORDS | ghost work, regime of visibility, big data, machine learning, contemporary visual culture

In the late eighteenth century a chess-playing automaton toured the courts of Europe. Known as the ‘Mechanical Turk’, the automaton defeated Napoleon and Benjamin Franklin before being exposed as a hoax: hiding in its innards, a human operator was, in fact, moving the chess pieces. In a way, this was a reverse Turing test, *avant la lettre*: a kind of labor requiring that humans pass for machines—with all that this passing entails, mainly a forfeiting of needs and rights, and more importantly, a forfeiting of time. In 2005 Amazon resurrected the ‘Turk’ but generalized its principle: the Amazon Mechanical Turk is a crowd-sourcing internet marketplace that “enables individuals and businesses to coordinate the use of human intelligence to perform tasks that computers are currently unable to do.”¹

Technically speaking, every mechanism usurps a human function. Whereas technology is usually expected to render work obsolete, to free laborers from the curse of labor, in reality it tends to render workers more pliable and prone to exploitation, and ends up extracting machine-like labor from automated humans.

Our project revolves around what Frederic Jameson called ‘cognitive mapping’, a term he introduced in 1988 in his eponymous essay. According to Jameson, the digital turn correlates with a crisis in representation: though equipped with a growing variety of optical media, we are increasingly unable to grasp the techno-corporate logic which surrounds us. Data’s primary mode of existence, as Alex Galloway argues, is not a visual one,² and the twin

forces of globalization and digitalization tend to widen the gap between individual experience and the economic structures that determine it. The problem of political agency is here reconceptualized as a problem of representation: the vectors of our digital infrastructure do not lend themselves to pictorial capture; in order to render the world intelligible we need a different set of intellectual tools.

In the present paper we will describe a subchapter of our research, in which we attempt to map the points of intersection between three different pairs of categories: human and non-human; work and non-work, and last but not least, art and non-art. Crucially these categories orbit around what Rod Aitken calls a 'regime of visibility,'³ or to quote Andrea Brighenti, depend on the "complex social, technical and political arrangements"⁴ through which certain aspects of experience are mediated, hence rendered perceptible sensorially. Addressing the question of hidden labor could be described as an exercise in rendering visible, in sketching a cartography of the coordinates that underpin the diffuse world of intangible economies. This is where the concept of work intersects with visual semiotics or with the language of the image – a point we will develop further in section 3 of this essay.

1. IT as Business Model

The concepts of work and job, to paraphrase Andrea Komlosy, derive meaning from different dimensions. Whereas work can be systematized into a great number of categories – including subsistence work, voluntary work, tributary work, independent work, dependent work, forced labor, organized labor, makeshift work, regulated or unregulated work, and unpaid work – the term job usually refers to formal employment.⁵

Not all of the above listed categories of work are economic categories. In fact, as Komlosy details in *Work: The Last 1000 Years*, the narrow economic definition of work tends to push unpaid labor into the realm of non-work.⁶ Household work, for instance, is a controversial and contested category whose status qua work is only symbolically, but not economically, acknowledged, hence remaining unremunerated. This brings us to the concept of shadow work. The term shadow work originates in Ivan Illich's concept of 'drudgery,' a concept that describes all the activities one cannot opt out of in a contemporary market society, yet remain unremunerated, like shopping, filing tax forms, running errands, queuing at the bank, court or welfare office. Illich's theories were famously attacked by feminist critics for denying that shadow work, though located within the economic sphere, does not create either use or exchange value.⁷ Objections notwithstanding, the concept of shadow work acquired a renewed relevance due to the digitalization of the economy, because, to follow Komlosy's argument, in a shift facilitated by internet connectivity and the ubiquity of mobile phones, administrative tasks and services, once performed by paid staff, are increasingly shifted onto the user. This transfer entails an unprecedented expansion of shadow work. From online bookings and sales to unmanned supermarket cashiers, online banking, etc., digital accessibility can be construed as the creeping expansion of working time. But the platform economy also entails the rise of digital labor markets, the locus of what researchers Mary L. Gray and Siddharth Suri call 'ghost work.'⁸

Before we move to an analysis of ghost work, it would be important to recall the feminist critique and note that, though shadow work is not recognized as work, hence not remunerated, it does create value. Here we would like to bring in the concept of 'surveillance capitalism,' theorized by Shoshanna Zuboff, and argue that shadow work, in fact, creates two different kinds of value. The most obvious one is cost-saving value. Less conspicuously, however, it also enhances the control factor.⁹ As researcher Shoshanna Zuboff argues, "under surveillance capitalism, people's lived experiences are unilaterally claimed by private companies and translated into proprietary data flows." A small percentage of these data are indeed used to improve products and services, but the rest are considered a 'behavioral surplus' and "valued for their rich predictive signals," that is for their contribution to the manufacturing of highly profitable prediction products that anticipate current and future consumer choices. These prediction products are then traded in what Zuboff calls 'behavioral futures markets,' markets where "surveillance capitalists sell certainty to their business customers." Google's 'clickthrough rate,' as Zuboff details, was the first globally successful prediction product; by extension, Google's advertising markets were the first to trade in human behavioral futures. 'Surveillance capitalism' is the term Zuboff uses to describe those trading operations that lay bets on future behavior, and which are no longer limited to the IT sector but have by now expanded to include ever more companies across nearly every economic sector. 'Data harvesting,' Zuboff argues, is the foundational element in a "deeply intentional and highly consequential new logic of accumulation" that "aims to predict and modify human behavior as a means to produce revenue and market control."¹⁰

This new economic formation, ‘surveillance capitalism,’ is, according to Zuboff, the emergent logic of accumulation in the network sphere, and the author describes four different types of uses that follow from computer-mediated transactions:

- data extraction and analysis
- new contractual forms due to better monitoring
- personalization and customization
- continuous experiments

For Zuboff, the examination of the character and consequences of these uses can illuminate the implicit economic logic of surveillance and the global architecture of computer mediation upon which it depends. Crucially, this logic is a business logic, not a technological logic or even a technological necessity. Big data, Zuboff maintains, “is not a technology or an inevitable technology effect. It is not an autonomous process... It originates in the social, and it is there that we must find it and know it.”

When it comes to the market sphere, the electronic text is already organized by the logic of accumulation in which it is embedded and the conflicts inherent to that logic. The logic of accumulation organizes perception and shapes the expression of technological affordances at their roots. It is the taken-for-granted context of any business model. Its assumptions are largely tacit, and its power to shape the field of possibilities is therefore largely invisible. It defines objectives, successes, failures, and problems. It determines what is measured, and what is passed over; how resources and people are allocated and organized; who is valued in what roles; what activities are undertaken – and to what purpose.¹¹

For the purposes of our project, there is a twofold takeaway, emerging from Zuboff’s research. Firstly, it is important to emphasize that computer mediation renders events, objects, and processes visible, knowable, and shareable in a new way, a distinction that “marks the difference between ‘smart’ and ‘dumb.’”¹² Secondly, the key point in her argument is that this logic of accumulation produces its own social relations. According to Mary L. Gray, the author of *Ghost Work* mentioned earlier, this logic entails the reorganization, and arguably the dismantling, of full-time employment. This is where we will now turn our attention.

2. The Unbankable and the Regime of Credit Visibility

The dismantling of employment could be construed as a class project, entailing a fundamental transformation of the nature of work, and by extension, of the social contract. As Tressie MacMillan Cottom argues, when one asks what an Uber driver is (a worker, or a vendor) the answer seems to be a “Platform entrepreneur.”¹³ Uber, MacMillan Cottom argues, claims to “offer flexibility and economic opportunity, in reality it provides a type of job-adjacent work that looks like it is embedded in the formal economy but is not governed by the same protections, shifting risk from the state or the employer to the worker.”¹⁴ The future, as MacMillan Cottom maintains, is “predicted to be less job-centric,” and digital technologies—in a process that has been greatly amplified by the COVID-19 pandemic—are the driving force behind the blurring of the borders between the formal and the informal economy. This is where entrepreneurship sits. Entrepreneurship is not often theorized as work. Rather it falls into a grey zone between work and investment, with investment defined as the outlay of an asset (time, money, effort, etc.) in hopes of a future payoff greater than the original input. Here language is tasked with mobilizing affect, with those subjected to processes of racial ascription being more vulnerable to the welfare stigma linked to cultural perceptions about deservingness and individual responsibility, and by extension, to the ideology of uplift.¹⁵ Platforms provide economic access but this inclusion has a predatory nature.

The same type of ‘predatory inclusion’ can be found in the field of personal finance. As Rob Aitken details in his essay “All Data is Credit Data: Constituting the Unbanked” there is a cluster of new practices “designed to make visible—and extract value from—those without formal credit scores in contemporary financial markets.”¹⁶ Personal finance provides us with a precedent: because traditional banking services excluded vast swaths of people operating on the margins of the formal economy, payday loans or prepaid cards responded to their financial needs. The World Bank claims there is a positive correlation between access to finance and firm creation, economic

growth, and poverty alleviation, and the microfinance industry has grown exponentially in the past few decades. The novelty, afforded by IT, is that projects that seek to foster 'financial inclusion' are now drawing from a range of available data that is non-financial in nature, from alternative sources, which can then be put to use to formalize credit scores for those without previous credit records or files. Alternative data sources include academic records, social media footprints, local public records, social networking patterns, mobile phone usage, psychometric test results, and payment streams. These diverse behavioral records gleaned from the users' online presence captures the hitherto 'credit invisible' to create a financial profile, and these experiments in what Aitken calls 'alternative credit scoring' are crucial to constituting the unbanked. Platforms like PayPal, Kabbage, and Square offer business loans targeted at micro-businesses and platform entrepreneurs by exploiting the vast amounts of personal data they have at their disposal. But most importantly, as Aitkens details, these attempts to "score the unbanked" also orbit around "regimes of visibility:"

Like all bodies, before the unbanked can be governed, they must first be made visible in particular ways, literally re-presented in forms which make them amenable to intervention. Organized attempts to "score" the unbanked are particularly preoccupied with a language of the visual. The unbanked, for example, are often most importantly framed as "credit invisible," a population defined by their lack of legible trace within any formalized mode of credit practice. Addressing the unbanked becomes, by extension, a kind of exercise in making visible, of finding methods with which they are made perceptible; an attempt "to recognize creditworthy individuals who would otherwise be difficult to identify," and to record the "behavior" of those outside of formal credit records.¹⁷

To make visible is, in a way, to bring something into the regime of finance, but as Aitkens notes, capitalization is "littered with the language and metaphor of the visual, implying that to convert something into a source of financial value, to allow it to "become investment," is a process that requires making it visible and subjecting it to a certain line of sight."¹⁸ "Capitalization" is, in this sense, governed by a particular viewpoint or gaze. Visual legibility, however, is a deeply contested terrain. Because data's primary mode of existence is not a visual one, within a digital environment the question of representation becomes mainly a problem of conversion: of how to translate abstract number into semiotic sign. Conversion is, however, not merely a technical operation, it is also an aesthetic one. Data have no form or structure; the Latin "data", as Galloway notes, means literally "the things having been given." Data have no form or structure. Whereas data are "ontologically raw," and linked to the empirical, information – as structured data, i.e. data which have taken on a form – is linked to the aesthetic.¹⁹ The rules, conventions and modalities the conversion of data into information undertakes thus constitute a form of mediality, since the very notion of a mediation already entails the appeal to sensory perceptual and semiotic elements. In other words, conversion is a medial situation, which call for analysis in terms of a) what entities are assigned the function of a medium, and b) when do the effects of mediation become visible. The approach captured by the term mediality also shifts the focus from questions of data visualization or information design to the ways and means of mediation. One of the aims of our research project is to generate the critical vocabulary that would allow one to describe digital mediality and its mode(s) of representation. The gap between the two forms of representation – political on the one hand, cultural on the other – is a constitutive feature of communication technologies and social media: the mechanisms that enable cultural participation simultaneously generating political exclusion: Nowhere is this more apparent than in the modalities of agency they afford.

3. Ghost Work

Ghost work, and here we are paraphrasing Gray, is a concept that describes on-demand piecemeal work such as flagging x-rated content, proofreading, transcribing audio, facilitating image recognition, monitoring social media platforms, captioning video, etc. Crucial to its definition is that this work is *intentionally* hidden in order to sustain the illusion of automation. Ghost work describes seemingly automated services that are in fact delivered by humans.²⁰

Some forms of ghost work have recently enjoyed a great deal of public scrutiny because of their traumatic, PTSD-inducing nature due to continued exposure to graphic violence and otherwise extreme content. Less attention has been given to their semiotic complexity. Facebook moderators, for instance, are routinely asked to make

decisions, in a couple of seconds, on questions that are highly controversial, or the subject of intense aesthetic debate like, for instance, how to decide when a nude is to be considered art, when it is to be considered pornography, or how to interpret the ideological content of an image in the absence of cultural context. The documentary *The Cleaners* (2018) by Hans Block und Moritz Riesewieck delves into this semiotic complexity, surveying what could be perhaps described as an anti-Bilderatlas, in the sense that they radically deny the possibility of immediate visual insight. What emerges instead is an equivocal world in which the iconic image of the naked 9-year-old Phan Thi Kim Phùc, fleeing napalm bombs during the Vietnam war, can be classified as child pornography, and as a result removed from social media. Yet not all ghost work makes the news. Most, dealing with less spectacular matters, remains unseen.

Social media moderation accounts for a small percentage of ghost work. As Gray and Suri detail, ghost work is mostly generated at the intersection of different programs. When two different pieces of software, or a piece of software and a piece of hardware, need to communicate, this communication is sourced via an application programming interface (API). APIs are software intermediaries that establish a common language, enabling applications to talk to other applications. Initially, software developers wrote code for computers only. The novelty the Mechanical Turk API introduced, according to Grey and Suri was to “enable software developers to write programs that automatically pay humans to do tasks that are beyond a computer’s capacity.”²¹

*Businesses call this mix of APIs, rote computation, and human ingenuity “crowdsourcing,” “microwork,” or “crowdwork.” Computer scientists call it “human computation.” Any project that can be broken down into a series of discrete tasks can be solved using human computation. Software can use these APIs to manage the workflow and process the output of computers and individuals and even pay people for their contributions once they have completed the task. These people power modern AI systems, websites, and apps that we all use and take for granted.*²²

Ghost work is intentionally rendered invisible because IT companies have an economic incentive to misrepresent the capacities and performance of machine learning. The global artificial intelligence market size was estimated at USD 39.9 billion in 2019 and is expected to reach USD 62.3 billion in 2020. The global AI market is also expected to expand at a compound annual growth rate of 50.51% during the period 2020-2021 – the only fast-growing sector at present and the sole compelling attempt to project another phase of capitalist accumulation beyond the – already exhausted – neoliberal one.

Concerns over the future of work, to return to Gray and Suri’s argument, have centered on whether technology will displace humans in the workplace and, if so, what to do with growing global surpluses of labor. Less attention has been placed on the types of jobs that will be created. One of the major transformations in the world of work over the past decade has been the emergence of online digital labor platforms. In contradistinction to the vast apparatus that oversees public and private job sectors, administrative bodies do little to track or identify this sort of economic activity, which has disrupted not only existing business models but also the employment model upon which these business models relied. By breaking down jobs into “tasks,” crowdwork platforms provide businesses with access to a large flexible workforce for the completion of small, often repetitive, clerical tasks. By extension these platforms also enable new ways of commodifying labor, and the rise of on-demand labor, or microtasks, as Grey and Suri argue, signals the allure of using APIs to organize, route, and schedule work, and selling it “on demand” to businesses.²³ Groups of workers that span multiple time zones offer businesses the possibility of completing projects at any time of day or night, and large numbers of workers mean that tasks can be accomplished quickly. Leveraging the power of “the crowd,” a business can access thousands of workers who can, for example, process large sets of data in a relatively short time period, with no further obligation by the business to those workers. They are not employees with a term of contract beyond the single task at hand, since flexibilization of employment is exactly what an always-on labor pool, plugged into APIs, provides: a massive hidden pool of people available for ghost work. This reorientation towards contingent labor offers today’s businesses a combination of human labor and AI, which can be deployed to develop new technologies. It was ghost work, it is important to note, that fuelled the recent AI revolution.²⁴

4. Artificial Intelligence

In 1951, Alan Turing described a thought experiment, which became widely known as the ‘Turing Test,’ though Turing himself termed it ‘The Imitation Game.’²⁵ The Imitation Game was a game conceived to tackle the issue of artificial intelligence, at that time known as machine intelligence, but the first experiment does not involve machines. Instead, Turing asks the reader to imagine two rooms, connected via computer screen and keyboard to a third room, in which a person who will be the game arbiter sits. In the first room one finds a man, in the second a woman – the two players, who are hidden from view but able to communicate via the computer terminal. The judge’s job is to determine which player is the man and which is the woman, whereas the woman’s job is to deceive the judge into misgendering her. The second experiment involves a variation of the same game, this time round replacing one player with a machine. Now the judge’s job is to decide which of the contestants is human. If he gets it wrong oftentimes, the computer must be a passable simulation of a human being, and hence intelligent. The Imitation Game is usually misunderstood as proof that the converse is also true: if a computer passes the test it must be a passable simulation of intelligence, and hence human.

Kevin P. Murphy defines machine learning as a “set of methods that can automatically detect patterns in data, and then use the uncovered patterns to predict future data.”²⁶ What is commonly called AI operates via correlation or visual pattern recognition; in other words, AI is a generalization of visual pattern recognition to the non-visual sphere. This is in turn divided into two subsets: classification and prediction, which are also in turn defined by a) pattern recognition and b) pattern prediction or, to put it in more precise terms, pattern generation via predictive algorithms.

Machine learning, Suri and Gray detail, typically starts with training data, for instance gathering images of dogs, sourced from social media posts. The machine-learning algorithm would compare new images against the pre-existing set and classify them accordingly, either as dog or as not dog. But not all images of furry animals can be clearly identified as dogs; sometimes the camera angle is askew, or the lighting is bad. This is where the human comes in.²⁷

In another example used by Gray and Suri to illustrate the outsourcing of allegedly automated tasks, the Stanford Human Centered AI Institute attempted to train algorithms to recognize the main object in an image. The team began by writing software that would download millions of random images from the internet.²⁸ Next they tried to develop machine-learning algorithms to automatically label images, requesting human help if, and only if, their classifier was unable to identify the central object in the image. But the machine made too many errors. In 2007 the team turned to MTurk in order to distribute image-labeling tasks to people: 49,000 workers from 167 countries correctly labeled 3.2 million images. After two and a half years their work created ImageNet. Ever since, research teams have used ImageNet with increasing success to develop image recognition algorithms. This example points to what Gray and Suri call the recurring paradox of automation: humans train an AI only to have the AI take over the task entirely. After that task is accomplished researchers turn their attention to a new, more complex task, generating another wave of ghost work.²⁹

This brings us to our second example, Forensic Architecture’s ‘Model Zoo’, which deals with a different dimension of invisibility, that which is tied to the opaque world of the global weapons industry. As the Forensic Architecture team detail, training a classifier to recognize objects usually requires thousands of images of that object in different conditions and contexts. For certain objects, however, typically objects that circulate covertly, there are too few images available, and even where images do exist, the process of collecting and classifying them can be extremely time consuming and labor-intensive:

Since 2018, Forensic Architecture has been working with ‘synthetic images’—photorealistic digital renderings of 3D models—to train classifiers to identify such munitions. Automated processes which deploy those classifiers have the potential to save months of manual, human-directed research. Forensic Architecture’s ‘Model Zoo’ includes a growing collection of 3D models of munitions and weapons, as well as the different classifiers trained to identify them making a catalogue of some of the most horrific weapons used in conflict today. 37-40mm tear gas canisters are some of the most common munitions deployed against protesters worldwide, including places such as Hong Kong, Chile, the US, Venezuela and Sudan. Forensic Architecture is developing techniques to automate the search and identification of such projectiles amongst the mass of videos uploaded online. We modeled thousands of commonly found

variations of this object—including different degrees of deformation, scratches, charrings and labels—rendered them as images, and used these images as training data for machine learning classifiers. Machine learning classifiers that use rendered images of 3D models, or ‘synthetic data’, can be made to perform better when ‘extreme’ variations of the modelled object are included in training examples. In addition to realistic synthetic variations, we textured a model of the projectile with random patterns and images. Extreme objects refine the thresholds of machine perception and recognisability, helping the classifier better recognise their shape, contours, and edges.³⁰

‘Model Zoo’ is of particular interest for our project because it allows us to address not only the question of visibility/invisibility but also the question of artistic autonomy vs. artistic heteronomy. It is here that we would introduce a third pair of terms, art and non-art, whose intersections with our first set of pairs, work and non-work, human and non-human, we will attempt to describe.

Up until recently, the critical vocabulary commanded by art history and aesthetics would allow these disciplines to describe and analyze the whole scope of visual culture. With visual digital culture this is no longer the case. Visual culture is itself a misnomer when one addresses digital culture because algorithms, information and data only have a second-hand relation to the field of the visual. The disciplines which would traditionally deal with questions of representation are thus ill-equipped to describe the new forms of mediality that digital cultures engender. This question not only affects their *method of study* but also their *object of study*. Ultimately, the question of representability mobilizes all the disciplines in which the humanities are rooted: semiotics, hermeneutics and aesthetics.

5. Artwork

The category ‘art’ in Western modernity could thus be construed as designating the alienation of artistic labor from other forms of labor. Because creativity is seen as the opposite of work, the dividing line between work and non-work correlates with the division art/non-art. Labor as an alienation of experience is opposed to art as a totalization of experience. In its strict meaning, as Peter Bürger notes, the term artistic autonomy is an ideological category that blends together an element of truth (the praxis of art is not totally assimilated into social praxis) with an element of untruth (the hypostatization of this fact, the result of an historical process, is wrongly perceived as the ‘essence’ of art).³¹ The artwork is fetishized as an exemplary product, the only object that is not subject to commodity logic. This appeal to a symbolic value beyond monetary value is that which a) guarantees the artwork’s market value, and its dual status as both a priceless and pricey commodity, and b) leads to the conceptualization of art as the domain of absolute creativity in which work can be represented as ‘freedom’, rather than toil or drudgery, and whose compensatory quality naturalizes forms of life lived under the rule of property.³²

The autonomy of the work of art is not its only relevant feature, but it is the feature that gives contemporary art its institutional consistency while allowing for an exceptional aesthetic fluidity.³³ In his forthcoming book *Vanishing Mediators*, art historian Andrew Stefan Wiener details how critical and scholarly accounts of contemporary art often focus on its pervasive heterogeneity: its tendency to incorporate non-artistic forms and materials, to combine distinct media, or to transcend conventional modes of aesthetic experience. In the last two decades, Wiener writes, artists have begun to position themselves as “activists, archivists, speculative philosophers, and digital privacy experts; they stage performances in public housing projects, tropical rainforests, and virtual online environments; they produce site-specific artworks in ATM vestibules, in international waters, and in the earth’s orbit.”³⁴ Even mass protests like Occupy Wall Street and the Arab Spring were claimed as public artworks, authored by the collectivity; exhibitions turned into flashpoints for debates about historical trauma and cultural reparations. It would seem, Wiener argues, that artists, critics, and an increasingly global audience have come to agree on an unlikely, seemingly paradoxical proposition: that for something to be considered art at all, it should be oriented toward something other than ‘art’. We would like to wade into this debate by saying that in our view this is indeed the case because the digital turn has blurred the distinction between the categories of ‘work,’ and ‘creativity,’ and the social status of work and non-work is changing radically. These changes, in turn, call for a renegotiation of the divide between art and non-art. There is however, as Wiener maintains, little adequate historical or theoretical analysis, or even consensus on the validity of these new fields, based as they are on an apparent contradiction.³⁵ As projects such as Forensic Architecture make manifest, part of the reason that heteronomy proves so difficult to negotiate is that it radically impacts not just the form and content of art, but its definition, indeed its very ontology.

NOTES

- ¹ See Wikipedia entry on Amazon Mechanical Turk: "Amazon Mechanical Turk," Wikipedia, last modified January 24, 2021, url: https://en.wikipedia.org/wiki/Amazon_Mechanical_Turk.
- ² Alexander Galloway, "Are Some Things Unrepresentable?" *Theory, Culture & Society* 28, no. 7–8 (2011): 85–102.
- ³ Rod Aitken, "'All Data Is Credit Data': Constituting the Unbanked," *Competition & Change* 21, no. 4 (2017): 274–300.
- ⁴ Andrea M. Brighenti, *Visibility in Social Theory and Social Research* (New York: Palgrave, 2020), 3.
- ⁵ Andrea Komlosy, *Work: The Last 1,000 Years* (New York: Verso, 2018), 70–71.
- ⁶ See Andrea Komlosy, *Work: The Last 1,000 Years* (New York: Verso, 2018).
- ⁷ Andrea Komlosy, *Work: The Last 1,000 Years*, 70–71.
- ⁸ Mary L. Gray, and Siddharth Suri, *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass* (Boston: Houghton Mifflin Harcourt, 2019).
- ⁹ Shoshana Zuboff, "Big Other: Surveillance Capitalism and the Prospects of an Information Civilization," *Journal of Information Technology* 30 (2015): 75–89.
- ¹⁰ Shoshana Zuboff, "Surveillance Capitalism," *Project Syndicate* (2020), accessed January 10, 2021, url: <https://www.project-syndicate.org/onpoint/surveillance-capitalism-exploiting-behavioral-data-by-shoshana-zuboff-2020-01>.
- ¹¹ Zuboff, "Big Other," 75–77.
- ¹² Zuboff, "Big Other," 76.
- ¹³ Tressie McMillan Cottom, "The Hustle Economy," *Dissent* (Fall 2020), accessed January 10, 2021. url: <https://www.dissentmagazine.org/article/the-hustle-economy>.
- ¹⁴ McMillan Cottom, "The Hustle Economy."
- ¹⁵ McMillan Cottom, "The Hustle Economy."
- ¹⁶ Rod Aitken, "'All Data Is Credit Data': Constituting the Unbanked," *Competition & Change* 21, no. 4 (2017): 275.
- ¹⁷ Aitken, "'All Data Is Credit Data': Constituting the Unbanked," 275.
- ¹⁸ Aitken, "'All Data Is Credit Data': Constituting the Unbanked," 279.
- ¹⁹ Galloway, "Are Some Things Unrepresentable?," 87.
- ²⁰ See Mary L. Gray, and Siddharth Suri, *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass* (Boston: Houghton Mifflin Harcourt, 2019).
- ²¹ Gray/Suri, *Ghost Work*, 15.
- ²² Gray/Suri, *Ghost Work*, 15.
- ²³ Gray/Suri, *Ghost Work*, 15–23.
- ²⁴ Gray/Suri, *Ghost Work*, 8.
- ²⁵ A. M. Turing, "Computing Machinery and Intelligence," *Mind*. New Series, Vol. 59, No. 236 (1950): 433–460.
- ²⁶ Gray/Suri, *Ghost Work*, 6.
- ²⁷ Gray/Suri, *Ghost Work*, 7.
- ²⁸ Gray/Suri, *Ghost Work*, 6–8.
- ²⁹ Gray/Suri, *Ghost Work*, 21.
- ³⁰ "Forensic Architecture," Model Zoo, last modified February 20, 2020, url: <https://forensic-architecture.org/investigation/model-zoo>.
- ³¹ Peter Bürger, *Theory of the Avant-Garde* (Minneapolis, MN: University of Minnesota Press, 1984), 46.
- ³² David Lloyd, *Under Representation: The Racial Regime of Aesthetics* (New York: Fordham, 2018), 10, 77.
- ³³ Daniel Spaulding, "Art, Value and the Freedom Fetish," *Mute* (2015), accessed January 10, 2021, url: <https://www.metamute.org/editorial/articles/art-value-and-freedom-fetish-0>.
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- ³⁵ Wiener, *Vanishing Mediators*, 1.

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