



COMMENT

The Hidden Labour of Digital Capitalism: Changes, Continuities, Critical Issues

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Abstract

Rapid technological development means that the ground on which recent academic studies and public debates about the future of work organisation are based is shifting too rapidly for predictions to be credible. Organisational studies scholars have provided a counterpoint to this futuristic, speculative debate about the world of tomorrow with studies that contextualise seemingly new trends within a longer history of industrial capitalism. In this article, using Moritz Altenried's *The Digital Factory* (2022) as a starting point, I further explore the historical contextualisation of two aspects of platform capitalism: its de-spatialisation and its use of "autonomy".

In recent years, academic studies and public debates about the future of work organization have flourished, with a focus on the changes brought about by platform capitalism, big data, and machine learning.¹ However, rapid technological development means that the ground on which these studies are based is shifting too rapidly for predictions to be credible. Organizational studies scholars have provided a counterpoint to this futuristic, speculative debate about the world of tomorrow with studies that contextualize seemingly new trends within a longer history of industrial capitalism.² In this article, using Moritz Altenried's *The Digital Factory*

¹Alex J. Wood, *Algorithmic Management: Consequences for Work Organisation and Working Conditions* (Seville, 2021); Thereza Balliester and Adam Elsheikhi, "The Future of Work: A Literature Review", *ILO Research Department Working Paper 29* (2018), pp. 1–54; Ursula Huws, "Logged Labour: A New Paradigm of Work Organisation?", *Work Organisation, Labour and Globalisation*, 10:1 (2016), pp. 7–26; Sarah Kessler, *Gigged: The End of the Job and the Future of Work* (London, 2018); Aditie Surie and Ursula Huws, *Platformization and Informality: Pathways of Change, Alteration, and Transformation* (Cham, 2023); Tiziano Bonini and Emiliano Treré, *Algorithms of Resistance* (Cambridge, MA, 2024).

²Dee Birnbaum and Mark Somers, "Past as Prologue: Taylorism, the New Scientific Management and Managing Human Capital", *International Journal of Organizational Analysis*, 31:6 (2023), pp. 2610–2622; Marc Steinberg, "From Automobile Capitalism to Platform Capitalism: Toyotism as a Prehistory of Digital Platforms", *Organization Studies*, 43:7 (2022), pp. 1069–1090.

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(2022) as a starting point, I further explore the historical contextualization of two aspects of platform capitalism: its de-spatialization and its use of “autonomy”. I use the term “platform capitalism” here rather than the broader “digital capitalism” to facilitate a focus on labour relations mediated by digital platforms, rather than all forms of data extraction and exploitation that occur within digital capitalism.³

This literature has identified a tension between the time-old dynamics of capitalism (the search for labour flexibility, low wages, cost-efficiency of production; regimented control of workers; subcontracting; and outsourcing) and what are arguably new dynamics (decision-making through large volumes of data harvested by machines; algorithmic management of labour; circumventing the wage relationship altogether with the construction of workers as contractors; a global and hyper-fragmented division of tasks), and this tension results in different interpretations. Is what we are observing just another frontier of Taylorism or has the use of the Internet as infrastructure to organize the economy changed the game altogether, ushering in a new form of capitalism?⁴

In his book, Moritz Altenried explores the territory around this tension, arguing that the digital factory is not a simple rebirth of Taylorism (p. 107) but a specific, original, unexpected offspring of it, whose characteristics require us to *upgrade*, so to speak, our understanding of classical Taylorism, and, by extension, our understanding of capitalism. The book highlights some key aspects of the phenomenon. Firstly, platform capitalism is founded *on* a reconfiguration of classical elements of Taylorism (motion efficiency, standardization of tasks, incremental speed up of production) but in different settings (the warehouse, the platform), with *new* technologies (the computer-based algorithm, the tracking devices), and, sometimes, with new groups of workers that have emerged through this process, such as gig workers, crowdworkers, “prosumers”, who constitute a whole new *digital* underclass. A virtue of the book is that it draws attention to different ways in which this reconfiguration occurs. There is some attention to the context of the warehouse, in particular Amazon, which closely resembles a factory enhanced by digital and data-driven processes that allow for the pervasive control of workers’ movements through space and their motions while performing a task.⁵ Big data allows one not only to register incoming and outgoing goods and their whereabouts in the distribution centre, but also to achieve a granular performance

³Nick Srnicek, *Platform Capitalism* (Cambridge, 2017); Niels van Doorn, “Platform Labor: On the Gendered and Racialized Exploitation of Low-Income Service Work in the ‘On-Demand’ Economy”, *Information, Communication & Society*, 20 (2017), pp. 898–914; Liang, Yin, Jeremy Aroles, and Bernd Brandl, “Charting Platform Capitalism: Definitions, Concepts and Ideologies”, *New Technology, Work and Employment*, 37:2 (2022), pp. 308–327.

⁴For an early definition of digital Taylorism, see Ayşe Günsel and Mesut Yamen, “Digital Taylorism as an Answer to the Requirements of the New Era”, in Bülent Akkaya (ed.), *Agile Business Leadership Methods for Industry 4.0* (Leeds, 2020), pp. 103–119.

⁵Bruno Cattero and Marta D’Onofrio, “Organizing and Collective Bargaining in the Digitized ‘Tertiary Factories’ of Amazon: A Comparison between Germany and Italy”, in Edoardo Ales *et al.* (eds), *Working in Digital and Smart Organizations: Legal, Economic and Organizational Perspectives on the Digitalization of Labour Relations* (Cham, 2018), pp. 141–164; Alessandro Delfanti, “Machinic Dispossession and Augmented Despotism: Digital Work in an Amazon Warehouse”, *New Media & Society*, 23:1 (2021), pp. 39–55; Alessandro Delfanti, *The Warehouse: Workers and Robots at Amazon* (London, 2021).

management of the employees (as well as, of course, customers' consumer behaviour). However, technological forms of surveillance enhance, rather than substitute, personal forms of control (p. 43).

While the logistics warehouses have a distinct feel of Fordist factories on overdrive, other ways in which the digital factories are organized are less obviously Fordist. The author reminds us (p. 40) that, after all, Marx, in his *Fragments on Machines*, had foretold that workers would/could become just "conscious linkages" between a matrix of automated machines, yet the way in which this has now been realized has remained hidden, unrecognizable to the eyes of the larger society, which sees platforms as technological providers of services (intermediaries or brokers) rather than entities that organize labour for production. Thus, the book introduces some of these invisible adobes of production, for instance those inhabited by the game players-workers, "digital migrants on Western servers" (p. 64), who, through repetitive and laborious digital tasks, test and quality assure games or earn "digital goods" (like in-game currency or weaponry) for companies to sell to (mainly) Western players of online role-playing games.

On the other hand, workers employed by crowdsourcing, "microwork" platforms, such as Amazon Turk, Upwork, or Wonolo, usually work from home, using a personal computer. They perform small tasks and earn small fees. They are distributed around the world and their micro – sometimes infinitesimal – tasks are connected by the platform, in ways that are often unknown to those who perform them. "They constitute a hyperflexible, on-demand workforce that can be accessed and let go in seconds. Most of them sweat over minor tasks that are not (yet) computable by machines but can easily be solved by a distributed mass of human cognition organized by algorithmic infrastructures" (p. 93). This broadly resonates with the seventeenth- and eighteenth-century putting-out system, which belies the idea that that system was a "transitional" phase towards industrial capitalism. But contemporary platform work differs from its predecessor in the extent of the geographical distribution and the fragmentation and integration of the different tasks – organized through the automated management of the platform, which "radicalizes" its flexibility and contingency.⁶

Finally, Altenried explores the human labour behind social media's quest to optimize the user experience, something that these companies need in order to fulfil their business model, aimed at serving adverts to those very users under the most favourable circumstances. This is where we enter the domain of "click work". There is still a lot of controversy on whether the unpaid activity performed by users, as they navigate through the content or generate their own, can be considered work.⁷ Users also create value for the social media company by flagging

⁶Alice Littlefield and Larry T. Reynolds, "The Putting-Out System: Transitional Form or Recurrent Feature of Capitalist Production?", *The Social Science Journal*, 27:4 (1990), pp. 359–372.

⁷Christian Fuchs and Marisol Sandoval, "Digital Workers of the World Unite! A Framework for Critically Theorising And Analysing Digital Labour", *tripleC: Communication, Capitalism & Critique*, 12:2 (2014), pp. 486–563; Hector Postigo, "Emerging Sources of Labor on the Internet: The Case of America Online Volunteers", *International Review of Social History*, 48:S11 (2003), pp. 205–223, available at <http://dx.doi.org/10.1017/S0020859003001329>; Hector Postigo, "The Socio-Technical Architecture of Digital Labor: Converting Play into YouTube Money", *New Media & Society*, 18:2 (2016), pp. 332–349; Niels van

inappropriate content, “liking” posts, or sharing articles via the “share” button, thereby facilitating the circulation of valuable content, which brings more users to those platforms. Altenried overwhelmingly focuses his attention on those who explicitly turn to social media to make a living. Google subcontracts the rating work to intermediaries such as Lionbridge; such work is carried out by a dispersed army of digital labourers around the world. These workers do not have any labour rights and set their own working hours and schedules, but they are penalized for working too little or too slowly. The rating feeds into the algorithm and improves it incrementally, thereby creating a hybrid entity that blends both artificial and human intelligence. Content moderators may work in more regimented offices, such as those at Arvato, in Berlin, itself a multinational that provides a range of services for the digital media. While machine learning is making great strides in identifying potentially inappropriate content, it is human labour, in companies like Arvato, that has the ability to make the culturally nuanced and contextual decisions that content moderation requires. Despite the hype around artificial intelligence, “human cognition remains central to content moderation, and a future in which decisions about what can stay on a platform and what must go are completely automated remains far off” (p. 143).

There are two lines of inquiry through which to historicize the work outlined above, and, in the process, to highlight changes, continuities, and critical issues. The first concerns the reconfiguration of the space of the factory. Notably, the factory has always been difficult to define, yet one could recognize it when one saw one. In 1894, Richard W. Cooke-Taylor traced the rather convoluted origins of the term, and, in 1802, identified the first piece of legislation in which the term was first mentioned in its modern sense.⁸ The *Act for the Preservation of the Health and Morals of Apprentices Employed in Cotton and other Mills, and in Cotton and other Factories* stated that the factory,

shall be taken to mean all buildings and premises situated within any part of the United Kingdom of Great Britain and Ireland wherein [...] steam, water, or any mechanical power shall be used to move or work any machinery employed in preparing, manufacturing or finishing or in any process to the manufacture of cotton, wool [...] or any fabric made thereof (p. 4).

This definition, and others that would follow, were descriptive in nature. They emphasized the physical premises, the presence of machinery moved by external power, and the process of manufacturing goods (initially fabric, later extended to any kind of product). These elements have been so enduring that they are central to contemporary accounts of the history of the factory.⁹ The size of the workplace, of the workforce, and of the machinery in a factory have attracted the most attention.

Doorn, “Platform Labor: On the Gendered and Racialized Exploitation of Low-Income Service Work in the ‘On-Demand’ Economy”, *Information, Communication & Society*, 20:6 (2017), pp. 898–914; Alessandro Gandini, “Labour Process Theory and the Gig Economy”, *Human Relations*, 72:6 (2019), pp. 1039–1056.

⁸Richard W. Cooke-Taylor, *The Factory System and The Factory Acts* (London, 1894).

⁹Allison Marsh, *The Factory: A Social History of Work and Technology* (New York, 2018).

But another tradition, from Adam Smith to Marx to Taylor to Harry Braverman, identifies the factory “system”, made up of division of labour, standardization of product, and time coordination of activities, as its most distinctive feature. In the twentieth century such a system found application beyond manufacturing, in the service sector, characterizing a variety of workplaces, from fast-food restaurants to call-centres, inspiring the idea that so-called post-industrial capitalism had, in fact, gone “back to the factory”.¹⁰

Platform capitalism has now once again reconfigured our understanding of the factory space by doing away with physical premises altogether. The nature of digital labour involves a large, machine-driven workforce that is globally dispersed, yet organized in an integrated process of value creation. This suggests that the factory was, after all, neither a specific production space characterized by bricks, mortar, and conveyor belts, nor a system of purely *industrial* production of goods as we knew it until the end of the twentieth century, but a social organization of labour based on the constant quantification of workers’ efforts and the acceleration of work, whatever the means or sector. In commenting on the de-spatialization of platform labour, geographers have similarly argued for a new conception of workplaces, one that sees them not simply as sites of labour, but as contingent structures of arrangement and coordination through which work takes place.¹¹ Platform capitalism may well denote a conceptual departure from the idea of the workplace as an actual place. Digital labour does require a material infrastructure – servers, underwater cables, and the apps themselves – but by disposing of the built environment of production platform capitalism has dismantled the factory into a set of organizational principles, or rather clarified what was all along the distinctive “genius” of its invention. Despite the decline of manufacturing in the Western world, the factory in this distilled, de-spatialized form of contingent structures is more pervasive than ever. In fact, it may have found its most important hegemonic form in digital Taylorism.

It is worth noting, however, that the spatial division of labour represents a continuity with earlier forms of industrial capitalism in another respect. The orchestration of these platforms and the demand for work usually originate in the Global North and often exploits a labour force in the Global South (or else, within a single country further the inequalities between its affluent and less affluent parts). The relationship hinges on the different cost of labour in the national markets, but also on Northern clients’ cultural expectations that Southern workers would accept lower wages.¹² In the South, platform work may look attractive when compared to local unemployment or unskilled labour rates. However, in continuity with outsourcing practices that have accelerated since the 1970s, digital platforms are designed to erase any bargaining power of workers in both the global North and

¹⁰Görkem Akgöz, Richard Croucher, and Nicola Pizzolato, “Back to the Factory: The Continuing Salience of Industrial Workplace History”, *Labor History*, 61:1 (2020), pp. 1–11.

¹¹Lizzie Richardson, “How is the Platform a Workplace? Moving from Sites to Infrastructure”, *Transactions of the Institute of British Geographers*, 49:1 (2024), pp. 1–14, available at <https://doi.org/10.1111/tran.12625>.

¹²Julieta Haidar and Maarten Keune (eds), *Work and Labour Relations in Global Platform Capitalism* (Cheltenham, 2021), p. 9.

South by fostering competition between different locations and wage rates. As a result, digital labour, even if it is temporarily advantageous in a particular geographical location, is characterized by dependency and inequality.

The second line of inquiry for a project of historicizing platform capitalism is to look at the trajectory of workers' autonomy. I am not referring here to the idea of political autonomy as studied in the tradition of *operaismo*, but to forms of decision-making and independence at work. The notion of "autonomy" is discursively deployed by platform companies operating in the "gig economy" to frame workers as independent contractors, freelancing in their spare time, for whom the company takes no responsibility for health insurance, taxes, paid breaks, or holidays and any of the expenses associated with carrying out their work. Uber drivers provide their own car (often leased) and fuel; delivery riders use their own bikes; TaskRabbit "taskers" have their own tools. However, the legal definition of such work is highly contested, as companies have developed a range of ways to control workers through performance incentives and penalties, customer ratings, quality controls that put workers in a dependent and subordinate position, much like classic employment relationships.¹³ Moving away from the paradigmatic cases of drivers and riders, a strand of the literature has looked at more ambiguous labour relationships with micro-work platforms, where workers do benefit from the control over their schedule and choice of tasks they can accept, but this exists in a context of a downward pressure on pay rates that forces them to accept more tasks or do more unpaid work in order to position themselves well in the competition for such tasks.¹⁴ These forms of indirect control through pay rates and customer rating have been studied as forms of "algorithmic management" that shape workers behaviour through the manipulation of large sets of data and variables for the purpose of behaviour modification.¹⁵

The organization of work in platform capitalism inevitably draws comparisons and contrasts with Taylorist forms of managerial control and subsequent strategies of workers' resistance in a context that is, however, far from the form of close supervision possible on the shop floor. While GPS technology and big data processing capabilities help companies such as Uber to have a "panoptical" view of what their workers – or, as they put it, "partners" – are doing at any given moment, much managerial control in platform capitalism is not, by necessity, spatial, but an elaboration of the "lean" working practices introduced in the industrial context. Lean – on occasion called "mean" – organizing principles were introduced in the

¹³Valerio De Stefano, "The Rise of the 'Just-in Time Workforce': On Demand Work, Crowdsourcing and Labour Protection in the 'Gig Economy'", *Comparative Labor Law & Policy Journal*, 37:3 (2016), pp. 461–471; Arianna Tassinari and Vincenzo Maccarrone, "The Mobilisation of Gig Economy Couriers in Italy: Some Lessons for the Trade Union Movement", *Transfer: European Review of Labour and Research*, 23:3 (2017), pp. 353–357; Jeremias Prassl, *Humans as a Service: The Promise and Perils of Work in the Gig Economy* (Oxford, 2018).

¹⁴Premilla D'Cruz and Ernesto Noronha, "Positives Outweighing Negatives: The Experiences of Indian Crowdsourced Workers", *Work Organisation, Labour and Globalisation*, 10:1 (2016), pp. 44–63.

¹⁵Alex Rosenblat and Luke Stark, "Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers", *International Journal of Communication*, 10 (2016), pp. 3758–3784, available at <http://dx.doi.org/10.2139/ssrn.2686227>.

1980s, first in the automotive industry, and later elsewhere, to lessen direct control on the assembly line, while at the same increasing efficiency and quality.¹⁶ Such changes were sold to the workers as gains in “autonomy”, but were in fact disruptive of how workers had been gaming the system in the continuous assembly line and mindful of the supervision costs necessary to counter such resistance. As Benjamin Coriot explains in a study of a French factory, such a transformation involved a drastic change in the social technology of control, in which the continuous flow of the line is disrupted to create distinct workspaces assigned to small groups of workers. While the number of parts to be assembled was still dictated by management, the groups were “free” and “autonomous” in the way they managed to meet the targets. Thus, management was no longer concerned with the precise motions of the individual, but with the performance of the group, which was placed in a situation of “controlled autonomy”.¹⁷ Here, autonomy has become a tool of self-discipline, as the total time to complete a task is now allocated to a group, within which individuals monitor each other’s contribution. Product defects can be traced back to groups, which are held accountable through a system of wage penalties. Throughout the 1990s, methods of “lean”, “flexible”, and “job enlargement” working were introduced, in various guises, across the manufacturing sector, hailed for their cost-saving benefits, and soon became essential for any large-scale manufacturers to be competitive. The counterpoint to this change was the eclipse of the forms of resistance and workers’ identity that had characterized classical Fordism.¹⁸ An additional managerial benefit of this new form of control was the reduced need for foremen and for quality control inspectors on the line. Groups of workers would now self-monitor both their pace and the quality of their output.

Digital Taylorism is often considered broadly as a continuation of industrial Taylorism in its ambition of exercise surveillance and control of worker performance, but in stark contrast in the way this is done through the medium of the platform. However, the historical connection with the rise of “lean” production constitutes a continuity; it shows how, also in the industrial setting, “autonomy” was mobilized by management for self-regulation, thereby furthering the aims of surveillance without the need for foreman activity, which is notably a figure of little import in platform capitalism. Platform companies have innovated on this legacy of lean working by adding the system of digital reputation – how many stars workers score with customers – and the ability to rapidly configure the process of work allocation on their app, in response to changes in the data patterns they have identified.¹⁹ This brings new challenges to the interface between autonomy and self-regulation on which platform capitalism is predicated.

Overall, focusing on historicizing the labour process and the labour relations on the platform allows us to unearth a labour process that is obscured by the hype that

¹⁶See Steinberg, “From Automobile Capitalism to Platform Capitalism”.

¹⁷Benjamin Coriot, “The Restructuring of the Assembly Line: A New Economy of Time and Control”, *Capital & Class*, 4:2 (1980), pp. 34–43, 40.

¹⁸Mahmoud Ezzamel, Hugh Willmott, and Frank Worthington, “Power, Control and Resistance in ‘The Factory That Time Forgot’”, *Journal of Management Studies*, 38:8 (2001), pp. 1053–1079.

¹⁹Alex J. Wood and Vili Lehdonvirta, “Platforms Disrupting Reputation: Precarity and Recognition Struggles in the Remote Gig Economy”, *Sociology*, 57:5 (2023), pp. 999–1016.

platform companies seek to create, disrupting the language of employment and labour to focus on collaboration, exchange, and shared purpose between customers, workers, and intermediaries. Much of the disguise of being tech firms rather than large employers rests on this discourse. Moritz Altenreid's *The Digital Factory* makes a brilliant contribution to this effort by moving the discussion towards the mundane reality of managerial control through technology and organization of labour – a nexus that is also central to the history of the factory.