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To cite this article: Tim Christiaens (27 Feb 2024): Cornelius Castoriadis' agonistic theory of the future of work at Amazon Mechanical Turk, *Distinktion: Journal of Social Theory*, DOI: [10.1080/1600910X.2024.2320661](https://doi.org/10.1080/1600910X.2024.2320661)

To link to this article: <https://doi.org/10.1080/1600910X.2024.2320661>



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Published online: 27 Feb 2024.



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Cornelius Castoriadis' agonistic theory of the future of work at Amazon Mechanical Turk

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ABSTRACT

Digital innovations are rapidly changing the contemporary workplace. Big Tech companies marketing algorithmic management increasingly decide on the Future of Work. Political responses, however, often focus on managing the impact of these technologies on workers. They leave the question of how these technologies are designed or how workers can determine their own futures unanswered. This approach risks surrendering the Future of Work debate to techno-determinist imaginaries aligned with corporate interests. Using Cornelius Castoriadis' early writings on worker struggles in French Tayloristic factories and his later oeuvre on conflictual social imaginaries, I propose an agonistic approach to the Future of Work. Not merely companies implementing workplace technologies, but also workers themselves possess agency in determining the Future of Work. Workers' frequent contestations against machinic surveillance and technologically mediated coordination of the labour process disclose an alternative Future of Work in which technologies are used to enhance worker autonomy rather than bureaucratic control. Worker struggles at Amazon Mechanical Turk illustrate this agonistic dynamic: Amazon mobilizes algorithmic management to fragment and control a workforce of globally dispersed remote workers, but the latter form online social communities and create counter-technologies to reappropriate control over the labour process.

KEYWORDS

Castoriadis; future of work; algorithmic management; gig economy; agonistic democracy; workplace democracy; Amazon Mechanical Turk

A political association draws a number of individuals at the same time out of their own circle: however they may be naturally kept asunder by age, mind, and fortune, it places them nearer together and brings them into contact. Once met, they can always meet again.

– Alexis de Tocqueville

Technological innovation is profoundly changing the world of work. Algorithmic hiring, people analytics, and the online gig economy are putting traditional labour relations under pressure. The Future of Work (FoW) debate subsequently tries to articulate imaginary trajectories for the transformation of work. However, this literature is often

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haunted by a techno-determinist bias (Pasquinelli 2023, 9–10; Santoni De Sio, Almeida, and Van Den Hoven 2021, 5). It tends to treat technological innovation as a given, while focusing on the impacts of new technologies on workers and ignoring the agency of workers themselves in shaping technological development. Policymaking intervenes as a mere ‘fire extinguisher’ to govern the consequences of new technologies rather than their development (Stamboliev and Christiaens 2024). The debate thereby leaves key decisions about the FoW to private companies and their investors. The latter decide which technologies are made and how they are implemented in workplaces, yet the public is expected to accept these decisions as inevitable outcomes of technological progress. The philosophical debate on automation and technological unemployment, for example, often considers automation as an inescapable fate (Danaher 2017; Frey and Osborne 2017; Mejia 2023; Skidelsky 2020; Susskind 2020). To ensure damage control from mass unemployment, some philosophers argue for government-imposed working time reduction (Kay 2020; Lewis and Stronge 2021) or a universal basic income as if automation itself is a foregone conclusion (Casassas 2008; Srnicek and Williams 2016; Van Parijs and Vanderborght 2017). Technological innovation as the propelling force behind the movement toward the FoW is subsequently black-boxed, with little discussion of the sociotechnical conundrums determining which technologies are made (Jasanoff 2016) or the financial decisions about which promising innovations receive funding (Mazzucato 2018). In the automation case, however, predictions of mass unemployment are probably exaggerated (Benanav 2020; OECD 2016; Smith 2020, 120–26) and are potentially better understood as disciplining tools for workers in the socioeconomic context of wage struggles (Casilli 2019, 71). Mass technological unemployment often acts as a threat against worker demands for better pay and working conditions, but it rarely comes to pass.

Cornelius Castoriadis would have argued that the techno-deterministic framing of the FoW illustrates how the instrumental rationality of technics (*la technique*) has become a dominant social imaginary (Carleheden 2010, 57; Papadimitropoulos 2018). Technological progress is viewed as a self-contained and self-moving process of rational mastery over nature, detached from human agency or social conflict (Castoriadis 2006 [1975], 30). It appears as an externally imposed, heteronomous fate to which one must submit. The social imaginary of technics neutralizes critical voices that dissent the current trajectory of sociotechnical development. However, this hegemonic framing of technological innovation as an inevitable future unresponsive to human agency ignores the many ways ordinary people have impacted technological development (Pasquinelli 2023, 80). Worker resistance, from nineteenth-century Luddism to data obfuscation today, has repeatedly rerouted technological development in the workplace (Bronowicka and Ivanova 2021; Brunton and Nissenbaum 2015; Mueller 2021). While software developers and the companies for which they work implement technologies in the workplace for their own aims, workers often oppose innovations that undercut their interests and repurpose workplace technologies to pursue their own goals. The strikes of platform workers about algorithmically induced wage theft or trade-unions’ court-cases against exploitative practices at Uber or Deliveroo have repeatedly forced platform companies to redesign their platforms to avoid legal liability. Contestation from below constitutes an important factor in determining the FoW (Grohmann 2023). As Dyer-Witheford, Kjosén, and Steinhoff (2019, 3) write, ‘machine intelligence

is the product not just of a technological logic, but simultaneously a social logic'. Corporations wishing to implement new technologies have to take social struggles into account when designing or revising their products. The standard FoW-literature partly captures this openness of technological innovation to human agency via the values-by-design paradigm (Aizenberg and Van Den Hoven 2020; Flanagan, Howe, and Nissenbaum 2008; Santoni De Sio, Almeida, and Van Den Hoven 2021; Van De Poel 2013), but this research programme predominantly studies how professional ethicists and software designers can collaborate to prevent harms on ordinary technology users; it barely unveils how ordinary users or workers themselves steer technological development.

To disclose the conflictual social logic of developing of workplace technologies, I turn to Cornelius Castoriadis' political philosophy.¹ Castoriadis is a Greek-French philosopher who started as a labour theorist within the Marxist editorial board of *Socialisme ou barbarie* with thinkers like Jean-François Lyotard and Claude Lefort. His early writings highlighted worker struggles over the implementation of Taylorist technologies in French factories, while he later elaborated this approach into a political philosophy centred around conflicts between competing social imaginaries for the future. To illustrate Castoriadis' agonistic philosophy of technology, I use workplace struggles at Amazon Mechanical Turk (AMT) over algorithmic management as a case-study. AMT is a crowdwork platform, operated by Amazon, that distributes clickwork to a global remote workforce. The platform was founded in 2005 to circulate 'Human Intelligence Tasks' (HITs) for Amazon's retail website, yet it has meanwhile grown into a worldwide hotspot for online crowdwork. AMT workers, also called 'Turkers', perform online microtasks that often go unnoticed, like training AI systems, labelling captcha images, and filling in academic surveys. Jeff Bezos subsequently dubbed AMT 'artificial artificial intelligence' (Lehdonvirta 2018, 21): whenever online consumers think they are interacting with an AI, they are often in contact with human workers hidden behind digital interfaces. While these workers seem isolated and subjected to overwhelming 'digital Taylorism' (Altenried 2022, 6; Huws 2014, 63; Kassem 2022, 60), they have successfully resisted algorithmic surveillance from Amazon and have even developed counter-technologies to reimagine a better FoW. Such worker struggles put into question the hegemonic techno-deterministic imaginary of the FoW. They illustrate agonistic contestation from below as a major factor in the development of workplace technologies.

Castoriadis on workplace technologies and conflicts

In the 1950s and 60s, Castoriadis was a leading member of *Socialisme ou barbarie*, a journal devoted to working-class politics edited by ex-Trotskyist philosopher-activists. The journal radicalized Trotsky's critique of Stalinism as a bureaucratic perversion of the Russian Revolution by arguing that, first, bureaucratization was part of the Russian Revolution's programme from the start and, second, that both the USSR and the capitalist West were examples of 'bureaucratic capitalism' (Hastings-King 2014, 33; Schismenos, Iōannou, and Spannos 2021, 54). In the USSR, revolutionaries might have spoken the language of proletarian autonomy, but their strategy of nationalizing industry and centralizing political decision-making *de facto* put a bureaucratic vanguard in power. The centrally planned industrial development policies and continuance of Taylorist capitalist production methods demonstrated, according to *Socialisme ou barbarie*, that the

Bolsheviks had merely replaced capitalism with bureaucratic party rule (Castoriadis 2012 [1961], 155). The class division between capitalists and proletarians was not overcome but managerialised (Castoriadis 2012 [1955], 24). Worker self-management or workplace democracy, at best, meant that workers could move up the ranks of the party bureaucracy into the managerial boards, but Marxism-Leninism did not establish direct worker control over the means of production.

In the West, managerial centralization was allegedly moving at a slower pace via gradual reforms rather than a sudden revolution (Hastings-King 2014, 135). Castoriadis extends his anti-bureaucratic critique to the capitalist West by focusing on Taylorism. The latter erodes worker autonomy in the labour process by concentrating information and decision-making powers in managerial factory elites (Papadimitropoulos 2015, 268; Popp-Madsen 2022, 77). While pre-industrial artisanal craftsmen had originally mastered the labour process and its rhythm autonomously, Taylorist assembly-line production methods installed a workforce entirely dependent on upper-management steering to do their jobs. Taylorism induced an extreme division of labour that not only vertically separated mental from manual labour in the factory, but also fragmented the manual workforce into a collection of disempowered individuals each assigned to a single minute task. By deskilling the workforce and embedding the power to coordinate the labour process into technologies like the assembly-line and the stopwatch, Taylorism established a redistribution of the division of labour that favoured managerial control over worker self-management (Castoriadis 2012 [1955], 25). In Harry Braverman's terminology (1975, 78–83), Taylorism separates the moments of conception and execution. Artisanal production endows workers with both the power to conceive of the product they are making and the responsibility to execute this plan according to their own design. Taylorist production, on the contrary, grants management the power to determine what will be produced, at which quality standards, and at what speed. Management becomes a directive class in control of the means of production, while workers become disempowered executants tasked with implementing these *dirigiste* orders (Castoriadis 2012 [1957]; 2012 [1958], 67 & 223). Workers lose oversight over the labour process, making them constitutively dependent on managerial direction. The workforce is also fragmented into isolated units of abstract labour-power that can be inserted into, shuffled across, or removed from the labour process at managerial convenience (Castoriadis 2012 [1958], 198 & 222). Traditional craft-based workplace communities are broken up to turn workers into a mere collection of atomized and dependent individuals whose cooperation would be exhaustively mediated by the assembly line. Coordination among workers during the labour process is almost entirely mediated through manager-controlled technological apparatuses. Labour-power is synthesized into a collective force of value-creation through the heteronomous mediation of centralized management. While trade-unions could form a counterweight to managerial power, Castoriadis argues that unions are often captured and integrated into the managerial layers of the factory (Castoriadis 2012 [1958], 210). Unions become part of the bureaucracy to attain better wages for workers in exchange for their loss of workplace autonomy.

In discussing the role of workplace technologies under Taylorism, Castoriadis rehearses much from Marx' critique of technology in *Capital: Volume I*. Contrary to frequent accusations of techno-determinism, *Capital* stated that the forces of production do not determine the course of history but are rooted in the relations of production.²As

Marx wrote, ‘it would be possible to write quite a history of the inventions, made since 1830, for the sole purpose of supplying capital with weapons against the revolts of the working class’ (Marx 1996 [1867], 349). Marx argued that large-scale industrial machinery was not a politically neutral medium for increasing labour productivity but a tactical move in a struggle for power over the labour process. Capital developed and deployed technological innovations to extend its power over the labour process, while workers’ luddite resistance in the nineteenth century constituted attempts to escape this power grab. Industrial technologies deskilled the workforce, prolonged the working day, and intensified production rhythms, which allowed capitalists to replace recalcitrant workers and extract more surplus-value from the remaining workforce (Christiaens 2020, 81; Dyer-Whitford, Kjoson, and Steinhoff 2019, 16–17; Hastings-King 2014, 42). Castoriadis (2012 [1961], 151) also analyses workplace technologies as inherently political: ‘Capitalism has created capitalist technology, which is by no means neutral. The real intention of capitalist technology is not to develop production for production’s sake: It is to subordinate and dominate the producers’ (Castoriadis 2012 [1957], 69).³ Technologies designed for capitalist imperatives bear the imprint of this heritage in their own design. They are constitutively marked by the quest for hierarchical control and alienate workers from their own capabilities to autonomously coordinate their labour (Jeremy Smith 2014, 156).

By and through their subjection to machinery, to an abstract alien and hostile will, human beings are deprived of the true content of their human activity, the conscious transformation of the natural world. The profound inclination that pushes for its realization in the object is constantly inhibited. (Castoriadis 2012 [1955], 44 my translation)

However, Castoriadis identifies a fundamental contradiction haunting the technologically mediated managerialisation of production (Castoriadis 2012 [1958], 199): bureaucratic capitalism needs the creative force of living labour to produce economic value, yet it simultaneously suppresses this self-moving creativity to retain its grip on the labour process. The self-expression of worker creativity fuels the production of commodities, yet bureaucratic capitalism must alienate workers from their creative potential to better control them (Castoriadis 2012 [1957], 53). According to Castoriadis, this contradiction fosters a struggle within the workplace between the formal and informal organization of the workforce (Castoriadis 2012 [1958] & 2012 [1961], 218 & 152). The managerial class imposes formal organizational structures under its own centralist command, while workers develop informal collaborative practices to retain some control over the labour process. ‘Formal organisation’ refers to the official company hierarchy coordinating the workplace from the managerial standpoint. Formal procedures and official chains of command consolidate managerial dominance over the labour process and establish top-down communication between the moments of conception and execution. These official structures streamline the labour process in the name of efficiency and productivity, yet they ironically subvert their own purpose by introducing new forms of inefficiency (Castoriadis 2012 [1957], 52). Management concentrates decision-making powers but cannot extract all relevant information from workers (Castoriadis 2012 [1958], 228). The labour process mobilizes a lot of workers’ tacit knowledge that they cannot or will not share with managers. The latter consequently make decisions in a context of irredeemable uncertainty, leading to mistakes and the constant need for

correction and revision. Management frequently adjusts previous decisions and restructures the firm's formal organization to extend its capacities for planning the labour process, but this constant reorganization also backfires as chains of command become blurry and workers get confused as to which orders they must execute (Castoriadis 2012 [1957] & 2012 [1958], 66 & 224).

Mirroring and subverting the firm's formal organization, workers separately build informal organizations. In response to the inefficiencies of bureaucratic management, workers spontaneously establish horizontal lines of communication outside the official company organogram that reinstitute their hold over the labour process (Castoriadis 2012 [1958], 213). These self-organized social ties partially amend the aforementioned managerial mismanagement, but they also return some control over the labour process to workers. Relying on their daily communal contacts inside and outside the factory, workers establish community-building strategies that increase the terrain for self-management and diminish the hold of bureaucratic power (Castoriadis 2012 [1957], 61). From these relationship communal bonds emerge that form a counterweight to workplace alienation. Castoriadis calls these informal networks 'elementary groups' (Castoriadis 2012 [1957] & 2012 [1958], 76 & 214). In the interstices of the formal organization, workers build their own self-organizing workplace communities. Elementary groups rarely perform explicit political resistance (Castoriadis 2012 [1957], 77), but they cultivate solidarities that emerge in times of social conflict. Informal social solidarity among workers then becomes the basis for collective action. When formal and informal organization clash, these elementary groups can leverage communal bonds to organize political resistance against managerial command.

The *Socialisme ou barbarie* group was heavily interested in these outbursts of spontaneous collective resistance (Hastings-King 2014; Popp-Madsen 2022, 180; Schismenos, Iōannou, and Spannos 2021, 55–56). According to the group, working-class self-organization was at the heart of the social struggles of the 1950s, like the 1953 June Uprising in East Berlin, the Billancourt strikes at the Parisian Renault factory, and the failed Hungarian Revolution of 1956. Technologies often play a key role in these struggles, according to Castoriadis. While they are introduced as 'weapons of the capitalist class', elementary groups disrupt their implementation through acts of sabotage or repurpose the mechanization of the labour process to undermine managerial power (Castoriadis 2013a [1976], 606). The assembly line creates choke points at which workers can attack the managerial order of formal organization. By making use of their direct contact with the means of production, workers turn workplace technologies into weapons for their own tactical purposes.

While Castoriadis describes elementary groups as initially non-political, their self-organized activity prefigures the kind of community required to make worker self-management under socialism possible (Castoriadis 2012 [1957] & 2012 [1958], 61 & 240). Rather than economic planning under central State authority, socialism is for Castoriadis a matter of direct worker control over the means of production on the level of the factory (Castoriadis 2012 [1958], 196). Workplace technologies play an important role in facilitating socialist worker self-management (Castoriadis 2012 [1957], 68; 2013b [1979], 90). While Taylorist technologies are designed to centralize control in the hands of managers, technology can also be designed to foster decentralization and direct worker democracy. For instance, Castoriadis surprisingly champions computer technology and so-called

‘planning factories’ (Castoriadis 2012 [1957], 92–98). These factories would produce multiple predictive models for the production decisions of other factories, so that worker councils in the latter could make informed collective decisions about production targets by choosing between multiple production plans. These computers would calculate multiple scenarios for each productive decision so that workers could freely choose which of these scenarios fits their aspirations best. In opposition to capitalist technology’s impetus for centralized managerialisation, Castoriadis wanted to use computer technology to make it possible for workers to directly govern the labour process without the need for supervisory agents.

Bureaucratic Capitalism at AMT

Castoriadis’ reflections on workplace conflicts and technologies derive from the factory-system of 1950s France, but those circumstances do not perfectly match today’s working conditions at AMT. Two shifts are worth mentioning to bridge the gap between traditional Taylorism and the surveillance technologies of online crowdwork platforms. (1) Thanks to labour market deregulation and ICT innovations, it has become easier for companies to manage a globalized workforce with more precarious contracts (Appay 1998; Huws 2014; Marazzi 2008). Workers are no longer gathered in a common physical site like a factory, which makes it easier for employers to break up communal solidarities rooted in workplace contacts. A company like Apple can today retain relatively few in-house staff for ‘core competences’ like marketing and R&D, while outsourcing the actual production of its commodities to subsidiary manufacturers in low-cost countries (Christiaens 2022, 25). This allows companies to maintain plausible deniability for labour law violations at subsidiary firms, while also facilitating just-in-time production methods in which a flexible layer of workers expands or shrinks depending on real-time market demand. AMT exemplifies this tendency (Altenried 2022, 94; Jones 2021, 32). It was originally developed as an internal service for Amazon’s own retail business: human workers had to check whether information on the Amazon website was correct, yet hiring employees for such simple tasks would be too costly. AMT allowed Amazon to mobilize a just-in-time global workforce of independent, low-paid individuals to verify information on Amazon’s webpage. Amazon built AMT as a crowdwork platform where individuals from across the globe could perform ‘human intelligence tasks’ (HITs) in exchange for micropayments. These workers were hired on a per-task basis at wage rates so low mainly third-world residents can reasonably expect to sustain themselves on this income. Later, Amazon opened up the platform for other companies to post their own HITs on AMT, so that today almost anyone can distribute cheap online tasks to a global just-in-time workforce (Tubaro, Casilli, and Coville 2020).

(2) As Castoriadis documents (Castoriadis 2006 [1975], 239–40), workers in the 1950s and 60s resisted the alienating and heteronomous working conditions of factory-society. They created informal organizations to retake control over the labour process. Capitalism responded to this call for disalienation by fostering a ‘new spirit of capitalism’ (Boltanski and Chiapello 2011) or ‘immaterial labour regimes’ (Lazzarato 1996) that favour horizontal collaborative networks, creative self-expression, and flexible individualized working arrangements. This seemingly post-bureaucratic workplace would liberate workers

from micromanaging bosses in favour of more self-directed action. In Castoriadis' terminology, the formal organization of the firm would explicitly encourage more informal self-organization. Platform companies like AMT or Uber explicitly present themselves as opportunities for independent workers to earn money without having a boss (Dubal 2017, 103; Pignot 2023, 148; Rosenblat 2018, 36). They promise flexible schedules, little human supervision, and entrepreneurial success. This is especially enticing for marginalized workers (e.g. workers in the Global South, women with care duties, the un(der)employed): one can perform clickwork for AMT from anywhere, with few qualifications, and at whatever time individuals choose. Rather than subjecting workers to direct managerial command, AMT lets workers free to decide for themselves how to conduct themselves (Jarrahi et al. 2021, 5; Woodcock and Graham 2020, 69).

This looks like the kind of autonomous labour that Castoriadis champions, yet Taylorism returns in a different guise. AMT still relies on the dispersion of worker communities into collections of atomized individuals based on the technological separation between the moments of conception and execution. AMT workers are hardly able to directly coordinate the labour process amongst themselves since their collaboration is predominantly mediated by the algorithmic management tools owned and operated by Amazon. There is still a division between managerial elites coordinating the labour process through formal organizational procedures and dependent workers who either execute algorithmic expectations or counter centralized coordination with informal methods of self-organization. On the side of formal organization, AMT distributes online work through its platform to a fragmented globalized collection of remote workers sitting isolated at their personal computers (Jones 2021, 70). Turkers rarely meet face-to-face and AMT is actively repressive of informal community-building or solidarity. The accounts of Turkers suspected of organizing protests are regularly shut down (Jones 2021, 51). While AMT promises workers flexibility and autonomy, its actions frame this freedom as individualistic rather than collective resources. Individual Turkers are encouraged to take entrepreneurial control of their future, as long as this does not entail collective organizing against Amazon itself. Atomized yet flexible workers are, on the contrary, put into competition with each other. While workers are *prima facie* free to log on or off, the platform's competitive pressures reward those who work at consumers' convenience and penalize those who do not. If AMT's algorithmic rankings favouring those who work at consumers' rhythm offer flexibility, it is predominantly in terms of constituting a just-in-time workforce at consumers' request. Workers subsequently have to individually ascertain algorithmic expectations through trial and error, and adapt accordingly (Heiland 2023). Working conditions are consequently tough on AMT. The considerable competition among Turkers for scarce jobs drives a race to the bottom for wages and social protections (Jones 2021, 46; Muldoon and Apostolidis 2023, 5; Wood et al. 2019, 68). The time Turkers spend looking and competing for tasks goes unpaid (Franke, Pulignano, and Marà 2023; Moradi and Levy 2020, 280).

AMT also gives new form to the separation of conception from execution. It substitutes the *ex ante* command of traditional Taylorism for *ex post* auditing and evaluations from consumers and algorithms. AMT gives little guidance up front on how Turkers are supposed to perform their tasks, but it installs quality checks to evaluate workers afterwards. Turkers' performance in individual HITs is rated by customers, which generates

an online reputation with which Turkers gain access or are blocked admittance to better-paying tasks. Those who obey customer expectations are rewarded for their efforts, while ‘underperformers’ are denied access to lucrative HITs. Whether crowdworkers can survive on their AMT income hence depends on their online reputation, which is unilaterally determined by the platform’s algorithms. Turkers are thus nominally free to organize their own labour-time flexibly, but there is still *ex post* evaluation of their performance conducted by customers and algorithms. Vallas & Schor thus call platforms like AMT ‘permissive potentates’ (2020, 281): they minimally interfere in the labour process itself but retain the power to unilaterally evaluate worker performance and determine the consequences of this performance. This power allows AMT to still undermine workers’ capacity to effectively conceive of their own working rhythm. Ratings ultimately determine which tasks workers can access and how much they earn from them (Altenried 2022, 117; Jones 2021, 52). Customer ratings, moreover, create a power imbalance that makes it easy for clients to abuse workers (Aloisi and De Stefano 2020, 75). Since customers rate workers but not *vice versa*, the possibilities for abuse are plenty. Customers frequently misrepresent tasks without accountability or refuse payment with few repercussions (Altenried 2022, 104; Casilli 2019, 152; Scholz 2017, 21). If workers complain, human supervisors are often unreachable. The dark side of post-bureaucratic individualization and flexibility is that workers are repeatedly abandoned to solve their own problems. Since there is no official human manager, there is also no one presumably responsible when algorithmic management goes wrong or customers abuse workers.

In terms of class composition, the Taylorist conflict between managerial and working classes identified by Castoriadis changes shape without disappearing completely. Human managers recede into the background because they are partly replaced by algorithms (Aloisi and De Stefano 2020, 78). The coordination of the labour process is extensively automatized, but a new elite of tech experts and their managers is put in charge of labour coordination (Christiaens 2022, 123; Pasquale 2020, 24; Zuboff 2019, 189). Software engineers do not directly command workers like a Soviet planning bureau imposing *ex ante* production targets, but they write algorithms that indirectly coordinate the workforce and rank workers’ performance. They tend to the technologies that ensure AMT workers are doing Amazon’s bidding. This allows platform companies to retain a smaller managerial elite, but there is still a strict division of labour between those who control the coordination of the labour process and those who execute heteronomous commands. Tech experts build and maintain the technologies that embed the dominance of Amazon over its workforce. The latter forms a flexible layer of atomized clickworkers acting as executant class. They possess little agency to determine the contents of their work, which the platform allows customers to establish unilaterally while offering workers no means to negotiate with clients about the contents (Vallas and Schor 2020, 278). Workers are free in terms of scheduling and choosing tasks, but they have no input on the contents of their labour. They must execute tasks as they are presented on AMT, and deviations are punished through negative ratings.

Digital Taylorism thereby comes with its own bureaucratic inefficiencies, this time not coming from overbearing human supervision but from supervisory neglect combined with unforgiving evaluation metrics. Software engineers usually design the platform infrastructure with little knowledge of working conditions for crowdworkers. Especially in payment software, Turkers often complain about design oversights and bugs in the

system leading to unpaid work (Christiaens 2023, 110–11; Rosenblat 2018, 115). Platforms, for instance, use payment software that is unavailable in some countries, or they pay in vouchers workers cannot use in their home countries. But not all inefficiencies come from mere technical bugs (Scholz 2017, 30–31). AMT, for example, checks workers' performance regularly by posting fake tasks as tests, a process called 'statistical monitoring' (MTurk 2023). If workers make mistakes, they face downrating or being banned from the platform. However, the algorithm identifies the 'correct answer' as the statistically most prevalent answer. If a majority of Turkers hence makes a mistake, the minority that correctly responded receives unjust punishment. Complaining about these cases is, however, difficult given the unreachability of human supervisors. Turkers have few channels to directly bring up their concerns to the engineers designing AMT's platform (Zhang et al. 2022, 14).

As in Castoriadis' factories, workers respond to these inefficiencies by generating informal organizations in elementary groups despite Amazon's best efforts to police worker communication. These elementary groups allow Turkers to regain some control over the labour process collectively. Meeting face-to-face is improbable, but online media outside Amazon's grasp provide a vibrant infrastructure for informal contacts (Casilli 2019, 157; Cini 2023, 133; Wood, Lehdonvirta, and Graham 2018, 101). Turkers meet on Reddit-forums or Facebook groups, where they conduct collaborative practices of sense-making and mutual aid. They discuss problems with AMT's management style, exchange tips on how to maximize revenues, warn for abusive clients, engage in friendly banter, or provide psychological support for shared hardships. Workers rarely join these online groups for political reasons (Wang et al. 2017, 2215), but online communities possess an embryonic potential for fermenting collective action (Della Porta, Chesta, and Cini 2023, 50; Woodcock 2021, 72). Collectively perceived injustices trigger shared sentiments of anger that can foster collective action in pursuit of more collective autonomy (Wood, Martindale, and Lehdonvirta 2023, 333). Elementary groups then transform into activist networks. In the early 2010s, for example, Indian Turkers faced difficulties in receiving proper payment through AMT's official remuneration channels (Katz 2017). AMT paid workers in vouchers they could hardly use in India, if payments came through at all. Frustrations with not receiving one's dues and failing to contact human managers were a frequent topic of debate on Turker social media. Around Christmas 2014, the problem reached its peak when Bezos bragged to *Business Insider* about being exceptionally approachable to his staff. Online Turker communities organized to flood Bezos' e-mail with complaints about working and payment conditions under the slogan 'We are not robots' (Casilli 2019, 157; Salehi et al. 2015, 3; Woodcock and Graham 2020, 87). Amazon had to redesign its digital payment scheme to accommodate its Indian workforce.

Such moments of collective resistance prefigure an agonistic model of the FoW and workplace technologies (Castoriadis 2017 [1973], 319). Worker-led collective action manifestly altered the digital infrastructure of AMT's platform. The latter is not a politically neutral instrument with its own evolution shielded from political interests, but a political stake in a struggle for control over the labour process. Amazon develops algorithmic management techniques to coordinate and monitor the workforce, yet it cannot unilaterally set the FoW in stone. Informal networks of elementary groups resist Amazon's power over the labour process. Episodes like the 'We are not robots'-

campaign reimagine what the FoW should look like and force Amazon to consider alternative futures. Rather than accepting their techno-determinist fate of submission to algorithmic control for minimal pay, Turkers form elementary groups that deploy counter-tactics to establish a more autonomous future. How this process of agonistic reimagination works forms the subject of the final section.

Reimagining the future of crowdwork

While Castoriadis' early writings say relatively little about how workers imagine their future or how such imaginaries shape real-life events, his later post-Marxist writings develop a political philosophy of agonistic imaginaries (Tucker 2005, 50). Castoriadis still writes about 'la lutte des classes à l'intérieur de l'industrie' (Castoriadis 2017 [1973], 317), but it becomes part of a larger struggle for human autonomy in all kinds of institutions. The struggle over who determines the FoW in the factory constitutes just one early illustration of a wider conflict between different social imaginaries. In all human institutions, a struggle takes place between forces that heteronomously determine the future in a top-down fashion and human collectives attempting to take autonomous control over their future (Popp-Madsen 2022, 92–93). Castoriadis' opposition between formal and informal organization transforms into tensions between *le social institué* and *le social instituant* (Castoriadis 2006 [1975], 167). Every society establishes particular institutions that embody its hegemonic social imaginary, but there is a subterranean pressure coming from within these institutions that pushes them towards change (Papadimitropoulos 2015, 266; Popp-Madsen 2022, 85; Tucker 2005, 51). Instituted society reproduces reality within the confines of established imaginary projects, but citizens can struggle against the reproduction of the status quo in order to make the unimaginable a reality. Instituted society carries a 'radical imaginary' (Castoriadis 2006 [1975], 220), a surplus that cannot be contained within the status quo and pushes for the creation of new institutions.

Instituted social imaginaries derive their authority, according to Castoriadis, from presenting themselves as immutable and unquestionable (K. Smith 2014, 17).

Society is, therefore, always the self-institution of the socialhistorical. But this self-institution generally is not known as such (which has led people to believe that it cannot be known as such). The alienation of heteronomy of society is self-alienation; the concealment of the being of society as self-institution in its own eyes, covering over its essential temporality. (Castoriadis 2006 [1975], 537)⁴

Instituted social imaginaries pre-establish the range of what is considered self-evident or common sense. Just how strong the hold of today's instituted imaginary is, is suggested by the diagnosis of Fredric Jameson and Mark Fisher that it is easier to imagine the end of the world than the end of capitalism (Fisher 2022, 1; Jameson 2005, 199). The range of imagined futures is restricted through the hegemonic social imaginary as if there is no alternative. This same closure of the imagination affects debates about the FoW. One reason why policymakers and philosophers focus on managing the impact of new technologies and people cannot imagine a more thorough democratization of technological innovation is because capitalist techno-determinism dominates the social imaginary (Castoriadis 2017 [1973], 300). It is exceptionally difficult to imagine how human

collectives could halt or resist the business decisions of Google, Amazon, or Uber. Technological progress unilaterally on Big Tech's terms is often experienced as inevitable (Zuboff 2019, 225). It is hence supposedly pointless to contest 'progress', despite the worrying levels of power that Big Tech corporations gain over the general public. As a result, policymaking concerned with the FoW focuses on mitigating the harmful impacts of novel technologies with social policies or values-by-design initiatives, but the public rarely determines the course of technological development directly and autonomously.

Pace Jameson and Fisher however, Castoriadis stresses that instituted social imaginaries are always fragile constructions (Carleheden 2010, 56). They need to constantly reaffirm themselves to retain their hold on human subjectivity, because institutions also contain an ineradicable radical imaginary capable of contesting instituted norms. The 'ideology of inevitabilism' (Zuboff 2019, 221) in technological innovation only convinces as long as its message is constantly repeated in the media and by repressing the memory of events where people have successfully altered the course of technological development. As Pasquinelli (2023, 9) argues, 'mythologies of technological autonomy and machine intelligence are nothing new: since the industrial age, they have existed to mystify the role of workers and subaltern classes'. Little attention is, for instance, allotted to the aforementioned workers' protests forcing AMT to change its digital payment infrastructure. Selective forgetfulness reminds the public of Big Tech's promises and successes yet obscures the grandiose failures of attempted innovations like Facebook's Metaverse, Amazon's delivery drones, or NFTs. It might be difficult to imagine a defeat of technological capitalism, but it would be misleading to present technological development as a process unilaterally determined by business interests (Castoriadis 2017 [1973], 319). While every society needs a shared imaginary, the particular form the latter takes is an outcome of open-ended, conflictual processes. The inertia of established institutions constantly bumps into creative forces pushing for change (Castoriadis 2006 [1975], 234).

Crucial in this tension are institutional crises or moments of heteronomy (Castoriadis 2006 [1975], 152). Once established, institutions tend to lead a life of their own and become increasingly impervious to input from their members. 'The other, however, disappears in collective anonymity, in the impersonal nature of the "economic mechanisms of the market" or in the "rationality of the Plan", of the law of a few presented as the law as such' (Castoriadis 2006 [1975], 162).⁵ Instituted society no longer facilitates people's attempts to autonomously coordinate their own lives, but actively hinders this pursuit by imposing institutional norms from above. Individuals feel forced to conform to pre-established institutional norms. AMT workers, for instance, were lured into crowdwork with the promise of flexible scheduling and entrepreneurial success, yet the institutional design of the platform pushes them to be constantly available for minuscule wages and execute microtasks at others' command. While these institutions were built to allow individuals to express their human creativity in a manner that generates value for others on the market, this autonomous creativity is domesticated into a format that fits the pre-established confines of AMT's business model.

Such moments of friction trigger resistance from self-organizing groups within established institutions. Individuals protest their perceived powerlessness vis-à-vis anonymous heteronomous systems that seem to pre-emptively restrict their agency and undercut their capacity to plan their own future. These resistances are, for Castoriadis,

not just a negative reaction to institutional norms but also a creative force, a reactivation of the human imaginary to adopt new norms and new institutions to serve the pursuit of human self-determination better. New shared identities are imagined as an alternative to the status quo (Castoriadis 2006 [1975], 222–23). This ‘magma’ of radical potential is an infinite resource for reimagining new ways of living (Castoriadis 2006 [1975], 497). Castoriadis derives the concept of ‘magma’ not, as one would expect, from geology but from algebra, where the word designates a structure from which an infinite variety of sets can be derived (Schismenos, Iōannou, and Spannos 2021, 69). If every instituted social imaginary is a particular mathematical set determining which elements in the world exist and what their constituent properties are, then the magma of radical imagination is the primordial resource from which all potential social imaginaries can be created. Political resistance, in other words, deconstructs the building blocks of the instituted social imaginary so that new imaginaries can re-emerge. It is a movement of ‘immanent transcendence’ (Castoriadis 2006 [1975], 481) insofar as forces from within the given social order assemble an instituent force that transcends the confines of this status quo.

Castoriadis’ normative goal in this struggle between instituted imaginaries and the radical imaginary is, despite his conceptual rephrasing, surprisingly similar to the goals in his earlier work. Previously he presented socialism as a mode of production advancing autonomous worker self-management; now the goal is still to institute human autonomous self-management, though not only in economic affairs (K. Smith 2014, 18). An autonomous social order is one conscious of its own createdness and open to constant reinstitution. While the social imaginary of modern technics conceals its own contingency and contestability by imagining the progress of technology as a politically neutral and inescapable fate, democratic and autonomous institutions would imagine technology as an ensemble of tools open to deliberation and change (Castoriadis 2006 [1975], 118–27; 2013a [1976], 606). The technological apparatus of society is an object of agonistic struggle between different groups striving to make and use technologies that support their pursuit of a free and good life. An agonistic politics of technology would hence affirm the constant transformability of technology. Rather than blocking Turkers from reforming the platforms that govern their work, such a society would aid them in autonomously configuring how crowdwork platforms should be designed and governed.

This agonistic approach to technology and technological development is relevant for the FoW-debate as well. Worker struggles against alienating technologies disclose a radical imaginary creative of new potential futures. The opposition of Turkers against AMT has not only been remarkable for its creation of unlikely forms of social identity and elementary groups. It has also given birth to an agonistic front to business-driven technology development, with Turkers creating new technologies embodying different imaginations of the FoW distinct from the future Amazon embeds in its technologies. By creating new digital tools in collaboration with activist academics, Turkers have opposed the heteronomy of the AMT-platform with counter-technologies that enhance worker autonomy. In some cases, these technological interventions remain on the individual level, as when Turkers install software that automatically alerts them whenever lucrative gigs appear (Lehdonvirta 2018, 22). But the struggle between Turkers and Amazon has also given rise to collective deployments of counter-technologies against AMT’s platform design.

In 2014, for example, workers and academics co-produced an online platform Dynamo to facilitate collective self-organization and political action (Cini 2023, 132–35; Kellogg, Valentine, and Christin 2020, 392; Salehi et al. 2015). Activists had noticed that traditional social media, like Reddit and WhatsApp, were very effective for short bursts of political activity but failed to provide an effective infrastructure for long-term campaigns requiring sustained collective coordination. The heterogeneity of the AMT workforce and the personal risks for activists of being banned constituted significant obstacles for political action (Lehdonvirta 2016; Schou and Bucher 2023). Some activists hence built Dynamo, shielded from Amazon’s surveillance, as a social communication platform that specifically supports political deliberation. On Dynamo, workers could propose initiatives, which would subsequently be up- or downvoted and discussed by others. The aforementioned ‘We are not robots’-campaign was one of the successful proposals first posted on Dynamo. The heteronomy of AMT’s platform design necessitated workers to take technological development in their own hands and reimagine the kinds of technology they would need to pursue collective self-determination. This act of resistance evaded the power of Amazon to unilaterally determine working conditions by fostering agonistic institutions through which workers could exercise resistance to Amazon’s labour-management strategy. New technologies like Dynamo offer Turkers an infrastructure to imagine working conditions differently.

Already in 2008, workers teamed up with the computer scientists Lily Irani and Six Silberman to build the most famous example of AMT worker empowerment, Turkopticon (Irani and Silberman 2013). The latter is an add-on for AMT that allows workers to rate and evaluate their clients. As mentioned, AMT allows consumers to rate worker performance but not *vice versa*, which creates opportunities for treating workers unfairly. Turkopticon creates a symmetrical evaluative power for workers wishing to warn each other for abusive clients (Jones 2021, 86; Kassem 2022, 72; Scholz 2017, 168–69). Rather than submitting a technology unilaterally designed by Amazon for favour itself and its consumers, workers reappropriated these technologies and modified them to fit their own aspirations. They became an active agent in the process of technological development. Through the production of counter-data, i.e. reputation data on potentially abusive consumers, Turkers instituted a counterweight to Amazon’s power over the labour process (Woodcock 2021, 62). This example reveals technological development and the FoW as an arena of struggle between competing imaginaries. While Amazon imagines its workforce as a collection of atomized and isolated individuals controlled through algorithmic management, Turkers imagine a future with more autonomous working conditions, in which they hold a certain amount of bargaining power vis-à-vis their clients. Technological development is an arena in which the competing fronts develop weapons to further their own politics of the future. Even more ambitious in this regard has been the project to develop Daemo, an alternative crowdwork platform created to compete with AMT (Casilli 2019, 158; Katz 2017; Whiting et al. 2017). It was launched in 2017 as a crowdwork platform similar to AMT but offers better pay and adds communication channels between workers and clients to prevent abuses and misunderstandings. Workers generally favour Daemo’s working conditions, but the main reason it has not yet outcompeted AMT is because the latter still enjoys network effects. It is hard to completely switch to a new platform if tasks and clients are still predominantly on AMT. Workers are thereby locked into using AMT for the moment.

My point is, in other words, not to present Daemo or alternative platforms as a magic silver bullet to suddenly outcompete and replace dominant platform companies, but to show that crowdworkers possess the creative potential to contest and influence the course of technological development and the FoW. There is potential in struggles that push for worker-centered participatory design to alter the FoW (Zhang et al. 2022, 4). Workplace technologies are not simply politically neutral instruments for rendering labour more efficient, but weapons in a struggle over the determination of the FoW. The latter is not a deterministic fate to which workers must submit and for which policy-makers can only design compensatory measures, but an open-ended field with multiple possible futures. Which FoW will turn out to be the actual future depends not on mere technological innovation but on political tensions between the instituted social imaginary of contemporary capitalism put forward by companies like Amazon, and the radical imaginary of workers opposing their heteronomous working conditions in the name of collective autonomy. Despite AMT still being the dominant crowdwork platform on the market, initiatives like Daemo embody a radical imaginary that pushes for alternative futures of work. It exemplifies an agonistic struggle over the FoW with competing platforms and digital infrastructures each instituting their own social order and struggling for market dominance. Which technologies govern crowdwork, how they function, and whose interests they serve are not a matter of apolitical, innovative progress but a stake in a struggle between the established institutions of contemporary capitalism and the oppositional forces of counter-power attempting to upend the one-dimensional closure in the imaginary of the FoW.

Conclusion

Workplace technologies are one of the main factors influencing contemporary imaginaries of the FoW. Algorithmic management techniques, online labour platforms, and AI-driven surveillance are major issues of concern for traditional labour relations. New information technologies allow companies to increasingly monitor workers and automate their conduct, while diminishing the opportunities for workers to contest their progressive subordination. It is hence worrying to observe a techno-deterministic current in FoW-debates that implicitly assumes the future of workplace technologies as pre-emptively fixed and closed to worker resistance. I have used the writings of Cornelius Castoriadis to argue for an agonistic approach to the FoW, using worker struggles at AMT as an illustrative case study. AMT is infamous for the coordinative power Amazon and its customers have over a global underpaid and marginalized workforce. The platform deploys techniques of algorithmic management and opaque rankings based on customer reviews to manage the labour process from a distance. In his early writings for *Socialisme ou barbarie*, Castoriadis described the rise of the Tayloristic techniques of labour management that have provided the original template for algorithmic management in the online gig economy. Castoriadis observed how the formal organization of Taylorist bureaucracies attempted to fragment the workforce and disempower workers by stripping the power of conception from their labour as an executant class. However, he also noted the emergence of informal organizations among workers responding to workplace mismanagement. These elementary groups offered workers emotional support and embryonic solidarity that could be politically mobilized in

times of conflict. The tensions between AMT and its workforce shows a similar contradiction between formal and informal organization, despite the innovations companies have implemented since the heydays of Taylorism. Such conflicts between businesses and their workers offer a vision for an agonistic approach to the FoW: workers regularly establish contestations from below that alter the course of technological development. Workplace technologies are not unilaterally introduced by powerful companies as if workers are mere passive victims of technological progress. Using Castoriadis' later philosophy of social imaginaries, I have argued that collective resistance among AMT workers display a radical instituent imaginary that contests the hegemonic framing of the FoW put forward by companies like Amazon. They have created counter-technologies, like Turkopticon and Dynamo, to foster alternative futures for the global online workplace.

Notes

1. I do not claim that Castoriadis is the only thinker to have advanced an agonistic theory of workplace technologies and the FoW. See, among others, (Alquati 1975; Braverman 1975; Lallement 2015; Sabel and Zeitlin 2002; Tronti 2019).
2. The later Castoriadis would accuse Marx of techno-determinism (Castoriadis 2017 [1973], 297–300), yet there is substantial literature to suggest that this reading is one-sided (Mau 2023, 225–52; Pasquinelli 2023, 82–84; Roberts 2018, 268–72; Wendling 2009, 204).
3. Translation from Castoriadis (1988, 104).
4. Translation from Castoriadis (1998, 372).
5. Translation from Castoriadis (1998, 109).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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