# Behind, through and beyond capitalist platforms
## Platformisation of work and labour in informational capitalism

*Mariano Zukerfeld*

**Mariano Zukerfeld is** a Researcher in the Science Technology and Society Centre, at CONICET (Argentinian National Scientific and Technical Research Council) and Maimónides University, Buenos Aires, Argentina.

### ABSTRACT

**This article aims to put forward an overarching typology of platform-related work. First, it places the platformisation of productive processes within a characterisation of informational capitalism. Then it proceeds by distinguishing between work *behind* and *through* capitalist platforms. The former refers to the informational, industrial and service work and workers who keep the platforms up and running. The greater part of the article is devoted to discussing the latter. This second category is further divided into three sub-categories of work and workers: 'gig labour', 'prosumers' and 'self-employed owners'. Finally, platform work and labour *beyond* capitalist platforms are addressed, with a further sub-typology. Here, three types of beyond-capitalist platforms are identified: co-ops, commons-based peer production and state-owned agencies.**

## Introduction

Platforms are increasingly shaping work and labour relations all over the world. Although many insightful analyses of this emerging tendency have been published, most of them tend to fall short regarding three connected issues. First, platformisation is not frequently framed by a narrative that clearly distinguishes stages of capitalism and periods within these stages. Even if stages and periods are distinguished, this is

usually done by resorting to technological, political or economic determinisms. Second, although sound typologies have been developed of platform work and labour, they have been mainly focused on a particular subset of platforms, that is platforms where the activities carried out by workers can be easily accommodated to the traditional notion of work. However, other platforms where new forms of work are emerging are barely looked upon as such. Third, and more importantly, typologies of platform work and labour tend to sideline non-capitalist platforms.

In this context, the objective of this article is threefold. First, it attempts to analyse the platformisation of productive processes relating to the rise and development of informational capitalism as the third stage of capitalism and defined as a totality. Additionally, it intends to relate the upsurge in platform work and labour to the second phase of informational capitalism. Second, it aims to put forward an overarching typology of platform-related work, starting by distinguishing between work *behind* and work *through* capitalist platforms. Third, it intends to briefly discuss platform work and labour *beyond* capitalist platforms, distinguishing three varieties: co-ops, commons-based peer production (CBPP) and state-owned agencies.

The remainder of this article is structured as follows. The second section characterises informational or cognitive capitalism (Castells, 1996; Vercellone, 2011; Boutang, 2011; Fuchs, 2010).

The third section discusses the types of work and labour that are subsumed under capitalist platforms. On the one hand, there are three types of through-the-platform workers: gig labour, prosumers and self-employed owners. On the other hand, there are several types of work behind the platforms: in-house or outsourced development of software and hardware, infrastructure, human resources, marketing, logistics and warehouse work.

However, platformisation of work and labour does not need to be confined to capitalist environments. Work through and behind platforms might well be – and already is – performed *beyond* capitalist firms. Thus, the fourth section intends to present some examples of this non-capitalist platformisation, by briefly discussing platforms run by three types of organisations: co-operatives, commons-based peer production and state agencies. Finally, the sixth section offers some concluding remarks.

## Informational capitalism and its distinctive features

Capitalism can be analytically divided into three stages: mercantile capitalism, which ranges approximately from the mid-15th century to the end of the 18th; industrial capitalism, which covers the period from the end of the 18th century up to the third quarter of the 20th century and informational capitalism, whose beginning can be approximately dated in the 1970s and which continues to this day (Castells, 1996; Fuchs, 2010; Boutang, 2011; Zukerfeld, 2017[1]).

I believe that two phases within informational capitalism must be distinguished: the phase of networks, which lasted from the 1970s to the 2000s and the phase of platforms,

---

1 Certainly, periodisation of capitalism is a contested topic and this particular periodisation is far from being the dominant one in post-modern academia.

from the 2000s onwards[2]. Each of these can be summarised in relation to six variables which cut across most variegated fields of social life: technology; organisation; subjectification and recognition; value systems (axiology); business models; and work and labour tendencies.[3]

## The phase of networks

Technologically, the phase of networks is characterised by three features that are closely related. The first of these is the rapid diffusion of informational goods, that is, goods composed purely or principally of digital information (software, music, videos, texts, data, etc.). A distinctive feature of digital information is that it has marginal costs close to zero or, in other words, negligible reproduction costs (Varian, 1995; Cafassi, 1998; Moulier Boutang, 2011; Rullani, 2000). Second, there has been exponential growth in the computing power of digital technologies at a constant price (known as Moore's law). The third feature has been the upsurge of informational networks – whose use value increases exponentially with their number of users (Varian, 1995; Rullani, 2000).

Organisationally, networks ruled this phase both in the form of network enterprises (Castells, 1996) and collaborative production (Bauwens, 2006; Benkler, 2006). Flexiblisation (outsourcing, precarisation, blurring between labour and leisure time, among others) and the polarisation of the workforce were also salient features (Standing, 2011; Huws, 2014; Armano and Murgia, 2014; Fumagali, 2007; Ettlinger, 2014; Iñigo Carrera, 2003; Fuchs and Sevignani, 2013). Regarding subjectification and recognition, as Castel (2002) pointed out, there was a general weakening of society as a totality, while subjects became more individualistic (Castel, 2002). Concerning axiology, the main bedrock of the value system of informational capitalism is the ideology of the entrepreneurship of the self (Foucault, 2010; Boltanski and Chiapello, 2005). Business models and regulations, in turn, were marked by a dramatic expansion of intellectual property and a profit-from-enclosures business model (Drahos, 2004; Hughes, 2006; Gervais, 2002; May & Sell, 2006; Zukerfeld, 2017b).

Finally, we come to work and labour tendencies, where the aforementioned features were closely related to the process of informationalisation and the automation of routine tasks and the introduction of non-mobile robotics. Informationalisation of productive processes can be looked at in two ways: occupational and sectoral. In the first category, there has been an upsurge in informational work. During these decades, it became increasingly apparent that the main labour activity of more and more workers was the production of informational goods using one or more digital technologies as their main means of labour (Castells, 1996; Pyoria, 2006). Programmers, audiovisual content producers, designers and journalists, among others, provide clear illustrations

---

2   This distinction partially coincides with that of Huws (2016). In turn, we can associate concepts such as Post-industrial society (Bell, 1973) or Societies of control (Deleuze, 1992) with the first period of informational capitalism. Even narratives by Castells (1996) or Cognitive Capitalism theorists (Rullani, 2000; Boutang, 2011; Vercellone, 2011) tend to be focused on the features of this first period. On the other end of the spectrum, concepts such as platform capitalism (Srnicek, 2017) and surveillance capitalism (Zuboff, 2019) place their emphasis on the second period of informational capitalism.

3   These represent an operationalsation (in simplified form) of the theoretical tools of cognitive materialism as presented in Zukerfeld, 2017.

of this[4]. In the second category, an ever-growing information sector has emerged, composed of productive units whose main (but not necessarily only) output is informational goods (software, texts, audiovisual content, etc.) (Kenessey 1987; Zukerfeld, 2013).

This analytical distinction makes it possible to differentiate between the 'information sector', which describes the informationalisation of productive units (performed by informational workers, by other types of workers or by technologies), and 'informational work', which refers specifically to the productive activities of workers who produce digital information, whether in the information sector or any other sector.

## The phase of platforms

The second phase of informational capitalism corresponds to *platforms*. It does not depart from previous tendencies. On the contrary, it develops them further and builds on them.

Technologically, algorithms based on machine learning and other techniques rely on what has come to be known as 'big data'. The resulting information flood results in an ever-growing scarcity (and hence commercial value) of human attention (Simon, 1996; Celis Bueno, 2016). Organisationally, platforms add their role as middlemen and gatekeepers, twisting the supposedly horizontal network organisation and giving management powers to algorithms (Huws, 2016). Subjectification, identities and recognition are marked by the rise of 'individuals' (Deleuze, 1992), fragile attention-seeking subjects dependent on capitalist platforms (Sibilia, 2008; Bauman 2005). In relation to axiology, noticeably capitalist value systems and ideological discourse promote concepts such as communities, openness and sharing (see Tapscott & Williams, 2007; Leadbeater, 2007; Anderson, 2009).

Business models regarding informational goods have shifted from profit-from-enclosures towards profit-from-openness and informational goods as services. (Pasquinelli, 2010; Petersen, 2008; Van Dijck & Nieborg, 2009; Langlois et. al., 2009; Fuchs, 2013, Scholz, 2013; Fisher, 2012; Zukerfeld, 2014; 2017; Lund & Zukerfeld, 2020).

Finally, work and labour tendencies coalesce, on the one hand in the automation of non-routine tasks (machine learning and other techniques) and mobile robotics and, on the other, in the platformisation of work and labour, the topic on which the remainder of this article focuses.

---

4    The lack of statistical standardisation presents us with challenges when we attempt to present clear figures about informational work and the information sector. In the case of informational work, for example, in a study presenting data from 1997, we can already observe that informational work represented 63% of the gross national product of the USA (Apte & Nath, 2007). With regard to the number of employees, a study carried out in 2006 estimated that they represented 59% of the total workforce of the USA in 2000 (Wolf, 2006). Data from the US Current Population Survey (CPS, November 2017), Computer and Internet Use Supplement, indicates that 60% of employees use the Internet at work. These figures are imperfect proxy indicators. However, taken as a whole, they suggest that informational work is very significant in the structure of employment.

     In sectoral terms, the information sector also has the largest share of employment. According to an estimate made by Fuchs (2011:90), it employed 48% of the workforce in the US, 42% in Germany and 49% in France. In spite of the limitations of this data, it is sufficient to show that informationalisation, in its sectoral and occupational dimensions, is a significant and even dominant tendency at least in the economic structure of the central countries.

## Platformisation: work behind and through capitalist platforms

Platformisation affects most types of work and non-work-related activities. Here we are specifically interested in those that are work-related. Nonetheless, as we shall see below, the separation is not clear-cut and there is a great variety of productive modalities which test the validity of the concepts of 'work' and 'labour' proper to industrial capitalism (Srnicek, 2017; Scholz, 2017; Langley & Leyshon, 2017; Madariaga et al., 2019).

## Previous literature on types of platform work

Types of platform work are discussed in several studies (Huws, 2016; De Groen et al., 2016; Howcroft and Bergvall-Kåreborn, 2018; Graham & Woodcock, 2018; Berg et al., 2018; Schmidt, 2017; Vandaele, 2018). Despite wide variations regarding terminology, most of them split work in capitalist platforms between two poles: on the one hand, 'online' (Vandaele, 2018), 'Cloud-work', 'web-based digital labour' (Schmidt, 2017), 'web-based' (Berg et al., 2018) and 'virtual global services' (De Groen et al., 2016). On the other hand, 'offline' (Vandaele, 2018), 'Gig work', 'location-based digital labour' (Schmidt, 2017), 'location-based' (Berg et al., 2018), 'Location specific' (Graham and Woodcock, 2018); 'Physical local services' (De Groen, et al., 2016).

Then, most authors go on to divide the first category into two sub-categories: Micro tasks, low skilled, crowd work (Vandaele, 2018; Graham and Woodcock, 2018; Schmidt, 2017; De Groen, et al., 2016) and freelance, high-skilled macrotasks (Vandaele, 2018; Graham and Woodcock, 2018; Berg et al., 2018; Schmidt, 2017[5]; De Groen, et al., 2016).

Regarding the second category, there is less consensus. De Groen et al. (2016) propose a further division between high and low/medium-skilled physical local services while Vandaele (2018) splits them between private settings and public spaces. In turn, Schmidt (2017) names specific activities: accommodation, transportation and delivery; and household and personal services.

To build on these insightful typologies, two issues need to be tackled. First, it is necessary to disambiguate the terminology and solve inner theoretical inconsistencies of the typologies. Second, there is a need to point out types of platform work that are partially or altogether missing in those classifications. In the context of terminology, the first category turns out to refer to platformised informational work. Being web-based, virtual and global are consequences of the fact that its products are mainly informational goods – which also means that these products are usually not services (as discussed elsewhere in this article in relation to the distinctive features of informational capitalism).

Conversely, the second category points to physical services – as De Groen et al. (2016) correctly stress. It is because they are physical services that they usually happen to be locally provided. Nonetheless, nothing prevents platforms from intermediating the selling of remote physical services, for example sending flowers or building a prototype thousands of miles away. To be sure, using location as a variable is the right choice when the focus is on potential worker organisation – as is the case in Vandaele (2018). However, here I want to zoom out and draw the big picture by presenting an account of the relation between the platforms and the different types of work and labour. In that

---

5   Berg et al. (2018) follow Schmidt (2017) in adding a third subcategory: contest-based creative crowdwork.

spirit, I will refer to all the aforementioned platform workers as gig labour, distinguishing between those who produce informational goods and those who provide physical services.

This leads me to the second issue. The theoretical endeavours reviewed up to this point refer basically to gig labour. This is a valuable effort, as this part of the workforce has increased enormously while its working conditions have remained precarious and usually unregulated. However, other types of platform work should not be sidelined. Indeed, there are at least three types of work that are not – or at least not fully – discussed in the aforementioned typologies.

The first category here is the self-employed workers who rent or sell their physical or intellectual property through platforms such as Airbnb, Amazon, Play Store or Spotify. Some typologies mention Airbnb work. Howcroft and Bergvall-Kåreborn (2018) and Schmidt (2017)[6] group Airbnb with Uber and delivery platforms. Moreover, adding to his typology of platform work ('digital labour platforms') Schmidt further distinguishes between platforms which offer 'tangible' and 'intangible' 'goods' for rent and sale. This is an important insight, although it is questionable whether these platforms should be regarded as work platforms. At least *some* of those people who offer goods and services through platforms such as Airbnb, Amazon, Spotify and Play Store do so as part of their working activities. Below I will elaborate on how to distinguish workers from capitalists on such platforms.

The second category refers to prosumers, that is, actors who produce content and deliver it through platforms such as YouTube, Instagram or Facebook. Users who serve as ad-consuming audiences can be added to these. While these activities tend to be sidelined in the typologies – or not considered as work or labour – there are authors who believe that they not only constitute work, but precisely the paradigmatic form of digital labour (Terranova, 2000; Fumagalli et al., 2018; Fuchs and Sevignani, 2013).

Last, how should we define the status of the workers who keep the platforms up and running? There is no argument that their activities are labour. Some of them, such as Amazon warehouse workers, are even invoked in discussions about the workings of platforms. But behind platforms there are also many other types of workers, such as in-house or outsourced software developers, salesforce, management, PR, physical services and hardware workers who are also sidelined in many typologies.

## A typology of platform work

What is it that all of these workers share that justifies grouping them? The answer is quite simple. They are crucial for an understanding of how capitalist platforms generate profits, which is the essence of any capitalist firm. This leads me to examine more closely the link between platforms and capitalist companies in general. In this article, I use the short expression 'capitalist platforms' to refer to capitalist companies that subsume Internet platforms and which tend to present the organisational, technological, axiological and business model traits that were described earlier as

---

6  Schmidt, in probably the most in-depth and sophisticated classification of platforms (2017:6), provides an ambiguous account of this issue, by including Airbnb both as a 'services – digital labour –' platform and a 'goods' platform, that is, not labour platform.

characteristic of the second phase of informational capitalism.[7] I further, provisionally, define 'platform work' as the productive activities of those subjects who are involved in generating profits for the capitalist platforms.[8]

A theoretically informed typology of platform work could make a valuable contribution to the characterisation of the second phase of informational capitalism in which the platformisation of labour is becoming apparent. Building on the previous discussion, Table 3 presents a summary of such a proposal.

**Table 1:   Types of work and labour in for-profit platforms**

| Type of Work and Labour | Sub-type of Workers | Goods and Services Produced | Examples |
|---|---|---|---|
| Behind the Platform | Services Workers | Services | Warehouse and delivery workers of Amazon |
| | Industrial Workers | Physical Goods | Hardware builders in Amazon |
| | Informational Workers | Informational Goods | Software developers in Amazon |
| Through the Platform | Self-employed Owners | Physical Goods and Related Services | Airbnb hosts, Amazon sellers |
| | | Informational Goods | Authors sharing music through Spotify App developers for Play Store or App Store |
| | Gig Labour | Services | Delivery workers of Deliveroo Uber drivers TaskRabbit cleaning workers |
| | | Informational Goods | Software developers, writers, audiovisual content producers, and microtaskers on Upwork, and Freelancer Crowdworkers on Amazon Mechanical Turk |
| | Prosumers | Informational Goods | Content creators for Facebook or YouTube Data producers for all platforms |
| | | Audience Labour | Audiences paying attention to ads on Facebook or YouTube |

Source: Author's elaboration.

7   Indeed, capitalist companies subsume – or resort to – one or several platforms but companies and platforms are analytically, legally, economically and technically different entities. Companies and platforms might or might not coincide. There are three possible situations. The most frequent one is where one company manages several platforms. The second and less frequent one is where there is one company that manages one platform. In the third situation, several companies might manage one platform.

8   The expression 'productive activities' is used to include but exceed work and labour, following the theoretical framework of *cognitive materialism* (for in depth discussion of this point see Zukerfeld, 2017:chapter 4). The topic would deserve an in depth discussion that goes beyond the scope of this article, it might be said that, for instance, consuming videos and ads qualifies as a productive activity even if it is not classified as labour – as some authors do, see below. This, of course, implies that there are other sources of profit (and exploitation) than labour, departing from Marx's labour theory of value (see Zukerfeld, 2017: chapter 5).

This model posits four main types of platform work. The first distinction splits work behind and through the platform. The former alludes not only to the production and reproduction process of the platform company and the platform itself but also to the production of the goods and services that the company supplies directly to its customers. The latter refers to productive activities that are mediated by capitalist platforms.

Therefore, the main criteria for distinguishing work behind and through the platform refers to the organisation of the productive process: is the platform engaged with the workers as an *intermediation* entity or is it the case that the capitalist platform *demands* labour for its operation? This organisational distinction sometimes expresses itself in the employment status of the workers, as we will discuss below. Work through the platforms deserves a closer look and encompasses three varieties: self-employed owners, gig labour and prosumers.

## Behind the platform workers

Platforms, as productive units, are located in the fourth sector, which is, the information sector of the economy. They employ informational workers, but also industrial and services workers. Informational workers (such as software developers and data scientists, audiovisual content designers, etc.) are essential in running and maintaining the platform itself. As this is the core business, it is not unusual that these workers are in-house. Some industrial workers are also needed, for instance, to develop hardware. In addition, platforms certainly require service workers, such as warehouse and delivery workers. Industrial and services workers are to some extent outsourced. For instance, job openings measured by job advertisements at Amazon include 30% of informational workers and 70% of industrial and service workers.[9]

Platforms are usually depicted as having a meagre workforce. This might be true for some platforms, but it is certainly not for others, such as Amazon (1,608,000 employees[10]), JD (310,000[11]), Alphabet (136,500[12]), Alibaba (254,000[13]), Meta Platforms (77,000[14]) and many others. More importantly, these companies were increasing their workforce steadily long before the outbreak of COVID-19.

9   Informational workers encompass jobs as: Software Development, Operations, IT and Support Engineering, Solution Architect, Data Science, Design, Machine Learning Science, Database Administration, Audiovisual Production (18,864 "open jobs" as July 2020. Source: Amazon.com)
    Industrial and services workers encompass jobs as: Product Management-non-tech
    Product Management-tech, Sales Advertising and Account Management, Fulfilment and Operations Management, Human Resources, Finance and Accounting, Business and Merchant Development, Business Intelligence, Instock Management, Facilities, Maintenance and Real Estate, Hardware Development, Investigation and Loss Prevention, Leadership Development and Training, Legal, Medical, Health and Safety, Administrative Support, Customer Service, Economics, Fulfilment/Warehouse Associate, Research Science (44,041 open jobs as July 2020. Source: Amazon.com)
10   Source: Amazon.com, Inc. 2021 Form 10-K Annual Report". U.S. Securities and Exchange Commission, Retrieved from: https://www.sec.gov/ix?doc=/Archives/edgar/data/0001018724/000101872422000005/amzn-20211231.htm. Last access: 7/25/2022
11   Source: https://en.wikipedia.org/wiki/JD.com#cite_note-JD-1. Last access: 7/25/2022.
12   Source: Alphabet Inc. 2021 Annual Form 10-K Report. December 31, 2021. U.S. Securities and Exchange Commission, Retrieved from: https://abc.xyz/investor/static/pdf/20220202_alphabet_10K.pdf?cache=fc81690. Last access: 7/25/2022
13   Source: Alibaba Group: Alibaba Group Announces March Quarter and Full Fiscal Year 2022 Results. Retrieved from: https://www.alibabagroup.com/en/news/press_pdf/p220526.pdf. Last access: 7/25/2022
14   Source: https://en.wikipedia.org/wiki/Meta_Platforms. Last access: 7/25/2022

Thus, the fact that platform companies typically profit from underpaid 'independent contractors' and unpaid prosumers should not obscure the reality that thousands of workers are under more or less formalised waged arrangements behind these platforms.

In sum, behind the platform workers include those informational, industrial and services workers who are needed to run and maintain the platform and operations of the capitalist platform. They include waged but also outsourced workers. The capitalist platforms operate as a demanding force, not as an intermediary.

## Through-the-platforms workers

The concept of through-the-platform refers to the workers engaged in productive processes where the platform functions as a formal and real intermediary between the supply of productive activities and the demand for them by potential clients. This usually implies that through-the-platform workers are not considered to be waged workers, but 'independent contractors', 'partners' or similar ideological and legal figures. These workers fall into three categories: self-employed owners, gig labour and prosumers.

### *Self-employed owners*

Self-employed owners can be found associated with capitalist platforms on which physical and informational goods are bought, sold, and rented. In this case, it is debatable whether the activities of asset-owners can be described as labour. However, in the case of micro or small businesses, where a certain threshold of production of goods and services is surpassed and whose commercial activity *entirely depends* on these Internet platforms, it is clear that these are indeed work processes that should also be regarded as platform work.

This typology makes a distinction between two types of self-employed owners working through platforms[15]. The first comprises those providing services, renting or selling physical goods. It includes people selling their products through commerce platforms but also those who rent out their houses through accommodation platforms. The second is made up of those producing informational goods. This includes musicians who upload their recordings to Spotify or similar platforms, individual software developers or small software firms delivering apps through platforms such as Play Store or AppStore.

In this modality, the production of the goods and services, in other words, the productive process prior to their commercialisation, takes place *outside* the platform. Thus, on the surface, it appears as if the platform is enabling commerce, rather than production or consumption. However, in reality, platforms are the linchpin of the production process. The production of an app or the rental of an apartment is only a viable option as part of a platform-controlled process. Indeed, small units of capital are increasingly subordinated to the control of platforms, their algorithms and rankings.

---

15   This builds on Schmidt, 2017.

## Gig labour

I use the expression 'gig' in this context because it is widely recognised and useful to refer to certain labour relations. It should be noted, however, that I reject the celebratory use of the expression and its ideological mainstream use by companies and public agencies.[16]

In gig labour, a fundamental internal division relates to the materiality of the product of labour. Some gig workers offer services (usually physical services: transportation, food delivery, domestic services and other manual labour), while others mediate the production of informational goods. The means of production, the applicable regulations, public visibility and political demands are accordingly divergent. Informational gig labour tends to be a precarious version of informational work. To distinguish varieties within it, I would resort to intellectual property and use the threshold of a *work* (a complete unit upon which copyright is bestowed automatically from its fixation on a tangible medium). While in 'crowdwork' or 'microtasking' workers carry out tasks which fail to surpass that threshold, in other 'freelance' activities complete works of authorship are produced[17]. This distinction is based on a legal difference (copyright/not copyright) but also seeks to avoid the high-skilled versus low-skilled dichotomies, as microtasks might be highly skilled (and vice versa).

Gig labour providing physical services is in all likelihood the category which first brought platform work to public attention. This can be categorised according to the spaces these services are provided in public (transportation, delivery and others); and private (cleaning, repairing) (Vandaele, 2018). Not only are the platforms that intermediate in these types of labours specialised, but they are also subject to different regulations.

Gig labour is difficult to measure because, among other reasons, operationalisations are highly variable and yield divergent data. In any case, all the figures show that this is an extremely recent tendency but rapidly expanding. A recent poll of UK residents found that the working-age adults who had worked for an online platform at least once a week doubled between 2016 and 2019, and accounted for 9.6% of the workforce – not including Airbnb or buying and selling goods online (Huws & Spencer, 2021; for a detailed account of platform work in Europe, see Huws et al., 2017, 2019). According to private estimations, in the USA, more than 25% of the total workforce engaged somehow in the gig economy, whereas 10% did so as their main job, and only some 1% did so working for platforms (Gig Economy, 2019). Other estimates for the USA differ somewhat. For instance, Farrel et al. (2018) suggest that 1.6% of US households generated platform earnings in March 2018 and 4.5% did so at some point in the previous year. All the authors emphasise that gig labour is growing at a fast pace.

---

16   For instance, the US Bureau of Labour Statistics defines 'gig' as 'a single project or task for which a worker is hired, often through a digital marketplace, to work on demand.' (Torpey and Hogan, 2016:1). This is not good enough, as it must be stated that gig workers overwhelmingly find themselves in precarious situations, lacking stability or a monthly guaranteed income, and forced to provide their own means of production (cars, houses, bikes, computers, etc.).

17   Most copyright laws and international treaties lack a definition of work, although this notion is the bedrock of every copyright system (Hughes, 2005). Judges define works through 'framing', zooming in or zooming out, but without establishing general universal rules or tests to decide what is a work (and qualifies for a copyright) and what is not. However, as Hughes convincingly argues, size matters. There is a certain minimum extension -which varies depending on the field referred to- that is required for a fixed informational and even original expression to be considered a work (Hughes, 2005).

*Prosumers*

The last group is the prosumers,[18] who perform the now well-known combination of production and consumption of informational goods, mainly during leisure time and not necessarily with monetary compensation. More precisely, there are three types of prosumer activities that might (or might not) be referred to as labour. First, there is content production. For instance, YouTubers upload 500 hours of video each minute to around 50 million channels[19]. Over the years, YouTube has managed to put in place an impressive economic, legal and ideological schema that serves several goals. Perhaps the main one is that prosumers give up some of their copyrights without any necessary monetary compensation while, at the same time, it provides a system of economic incentives which those prosumers who are eager to earn money can apply for, that is, the YouTube Partner Programme (YP), although the threshold for entering it is becoming increasingly difficult to surpass. The Terms of Service, Community Guidelines and constantly tightening regulations of the YouTube Partner Programme are crucial to legally frame this model. To engage prosumers in helping the platform to be profitable, YouTube successfully appeals to fantasies of enrichment, despite 97% of 'creators' not earning enough to surpass the poverty line, payments per view having decreased in comparison to 2015, and the ratio between videos and views are on the fall (Lund & Zukerfeld, 2020: Chapter 6).

Second, prosumers also consume content and, more importantly, advertisements, providing us with our second category of prosumer activity. Indeed, YouTube has 1.9 billion monthly active users worldwide, who watch around 5 billion videos daily, giving away not only their data but also their valuable and scarce attention. This has been stressed by Fuchs (2010) and his colleagues (e.g., Fisher, 2012; Allmer et al., 2015) who build on Dallas Smythe's (2006) notion of the audience commodity. According to this perspective, Internet users consuming ads are labouring and, therefore, creating value and being exploited (Fuchs, 2010).

Third, prosumers give away all types of data by 'sharing' personal preferences and location, liking videos, ranking drivers and hosts, and so forth. The relevance of these seemingly infinitesimal contributions has been underlined repeatedly and Srnicek (2017) even defines all capitalist platforms in relation to their profiting from these data. But does the production of data qualify as work? The extent to which both content and ad consumption and data generation constitute work is a contested topic (for instance Bolaño and Vieira, 2015 and Fuchs, 2015). Here it is enough to stress that this kind of activity must not be swept under the carpet when the dynamics of work in informational capitalism are discussed. [20]

---

18    The term was coined by Alvin Toffler (Toffler, 1980: 265) and it is still widely used in the field of management (Tapscott and Williams, 2007). Its optimistic appeal has been subverted by critical theorists (Ritzer and Jurgenson, 2010; Fuchs, 2013). All in all, the concept of prosumer has limitations which cannot be tackled here. For in-depth discussion, see Lund and Zukerfeld, 2020: Chapter 2.

19    Sources: Tubics, How many Youtube channels are? Retrieved from: https://www.tubics.com/blog/number-of-youtube-channels#:~:text=As%20of%202022%2C%20there%20are,hours%20of%20video%20every%20minute. Last access:7/26/2022

20    Should professional content creators (e.g. full-time YouTubers) be characterised as prosumers? It depends on how they (influencers or YouTubers) meet the definition of prosumer: Do they consume content? Do they engage in this productive relations accepting they might not have any monetary compensation? If both answers are yes, they are prosumers. If both answers are no, they do not meet the criteria established and, indeed, they should be categorised as owners of informational goods. Certainly, there are gray areas.

## Reflections on workers through the platforms

The three forms of work through the platforms are threaded by a particular ideological discourse whose main trait is referring to the workers as 'independent contractors' or 'partners', aiming at obscuring the actual labour relations and any associated exploitation (Berg et al., 2018; Howcroft & Bergvall-Kåreborn, 2018). This cannot be detached from the ideological framework of the 'entrepreneur of the self'.

In the same vein, ideological discourses from platforms include references to 'freedom': despite their differences, most – if not all – through-the-platform workers are said to choose their working hours. Of course, this is but negative freedom (Berlin, 1969) which neglects the material needs of workers and the fact that working time is ultimately governed by algorithms.

The discourse used by most platforms also flags up other concepts usually associated with non-commercial spheres such as 'communities' (that are in reality instrumental networks), 'creativity' (which YouTube understands as creating and expanding audiences), 'openness', 'affect', 'happiness', 'playing' and 'enjoyment' (all of which help to engage unpaid or underpaid producers) (Zukerfeld & Lund, 2020: Chapter 6).

It is noteworthy that in most of the through-the-platform types of work, payments and income are not necessarily measured in terms of labour time, but on a piece-work-based payment system, (Vandaele, 2018: 8), or per-click in prosumption. This feature, together with outsourcing, resembles both the putting-out system and the forms of piece-work that Marx described (Marx, 1867, Chapter 13–14) and suggests a second formal subsumption of labour under capital as Vercellone (2011) has proposed.

Nevertheless, when working through the platform, workers are generally owners of some, if not all, of the means of production. There are huge differences in the relative value of houses, musical instruments and bikes. However, the fact that through-the-platform workers are owners of such commodities alleviates the platform companies from providing these means of production. More importantly, even if through-the-platform workers are owners of important means of production, they are still dependent on platform capitalists who own the platforms, as platforms themselves (software, hardware, storage capacity and more importantly, attention flows of demand) are the main means of production.

The basic distinction between gig labour platforms and those for prosumption concerns the income of the workers and the division between working time and leisure time. However, in practice, this is a gradation rather than a sharp distinction. For this reason, empirical studies often find that workers on job platforms mainly work on them in their 'free' time, to supplement their income from other jobs. And, in contrast, prosumers often transform their activity on the platforms into work in which they invest a great quantity of hours with hopes, sometimes fulfilled, of earning an income (Burgess & Green, 2018; Ardévol & Márquez, 2017)

This intersects with an organisational feature of informational capitalism mentioned above: the blurring of the boundary between leisure time and working hours.

How are the different types of through-the-platform work related to automation? Two hypotheses would deserve a closer look in further research. First, although gig labour tends to epitomise platform work in public discourse, many such workers may

likely be replaced over the coming decades both in physical services (for example through the use of driverless vehicles) and in informational work (through machine learning). Automation is making rapid progress. On the other hand, self-employed owners (especially those with physical assets) and prosumers (as their content, but especially their human data and attention are in need) seem to be less vulnerable to this tendency.

## Work beyond capitalist platforms

In the vast majority of studies produced by specialists in sociology and economics of labour, capitalist relations are accepted as an inescapable landscape and, therefore, are made invisible. Critics such as Frederic Jameson (1994; 2003), Slavoj Žižek (2010) and Mark Fisher (2009), who distils this in the expression 'capitalist realism', have pointed out that it seems easier to imagine the end of the world than the end of capitalism. However, in recent years a number of simple arguments have emerged that lay out the limits of capitalism as we know it to absorb transformations regarding work (Rifkin, 2014; Bastani, 2019; Mason, 2015; Srnicek and Williams, 2015; Frase, 2016[21]). Moreover, some seeds of post-capitalist futures are arguably already there, growing even in a hostile environment. Despite being much less publicised, non-profit alternatives exist not only to work through platforms, but also to work before and behind platforms. In this context, it is worth recalling that informationalisation began as a not-for-profit endeavour, rooted in the publicly run ARPANET/Internet, open and free TCP/IP and software and others (Castells, 1996)[22]. Although capitalism has found ways to profit from these initiatives, its public-sphere-oriented side is still thriving. These existing alternatives to capitalist platforms have been repeatedly brought to light in the last decade (Scholz, 2016; De Angelis, 2017; Fuchs, 2014; Bauwens and Kostakis, 2014; Lund, 2017; Rigi, 2012). Despite their heterogeneity, these non-capitalist platforms share at least three features (adapted from Scholz, 2016). First, they regulate productive processes under ownership systems different from those used by capitalist platforms. This applies not only to the means of production (e.g. the software used on the platform) but also to products, for example, releasing their products under non-restrictive licenses such as General Public License and Creative Commons[23]. Second, they embrace non-capitalist values: democratic governance, solidarity and a different understanding of the notion of efficiency, one in which profit is not the main driver of social activity. Last, they tend to copy the 'technological heart' of similar capitalist platforms. But what kinds of organisations are running these non-capitalist platforms?

---

21  In contrast to reductionist and teleological perspectives of some authors, Peter Frase's (2016) exercise in social science fiction is illuminating. It identifies four possible futures characterised by two variables: resource abundance vs. scarcity and egalitarianism vs. hierarchy. They are Communism (abundance and equality), Socialism (scarcity and equality), Rentism (abundance and hierarchy), and Exterminism (scarcity and hierarchy).

22  Discussing non-capitalist informationalisation and digital automation, important as it is, exceeds the aims and scope of this article focused on platformisation of work and labour.

23  Cfr. the proposal of a new family of licenses (Commoners License Family) which is specifically aimed at fostering the public sphere and limiting its appropriation and depletion by capitalist companies (Lund and Zukerman, 2020: Conclusion).

Three types of organisations running non-capitalist platforms can be distinguished: Co-ops, Commons-Based Peer Production (CBPP) and State-Funded Institutions (Scholz, 2016; Fuchs, 2019; Tarnoff, 2019; Lund & Zukerfeld, 2020). All of these beyond capitalist platforms alternatives combine work behind the platform (informational work) with work through the platform (which is case-dependent).

## Co-ops

A Cooperative or Co-op is usually understood to be a business owned by its workers, users or a combination of both, and where the decision-making process is conducted in a fairly democratic way. Here we are interested in the particular sub-set of platform co-ops, that is, co-ops that are based on computing platforms and develop their commercial activities through the Internet (Scholz, 2016).

Workers for these platform co-ops can be split into four categories. First, some workers share rent or sell their physical assets. They provide services related to these physical goods through platforms such as Fairbnb (sharing accommodation), Modo (member-owned carsharing) or Fairmondo (an online marketplace for selling any goods). Although variations exist and, for instance, some Fairmondo sellers might put a good deal of effort into creating their goods from scratch, most of these workers work only modest amounts of time. Conversely, and second, some workers own physical assets but act as independent workers rather than cooperative rentiers, such as the cab drivers of Green Taxi Cooperative. Third, some people own the informational goods they produce. These informational workers produce their informational goods, that is, they own the means of production and the resulting products. They resort to platform co-ops such as Stocksy (pictures) and Resonate (music) to commercialise their goods. Interestingly, the business model of these platforms is based on profit-from-enclosures, that is, paywalls and subscriptions. Indeed, co-ops and open content should not be confused.

More generally, platform co-ops are more concerned with distributing power and income between platforms (including behind-platform workers) and through-the-platform workers more fairly than with creating commons[24]. Fourth, there are propertyless service providers, who work through platforms such as Up&Go (cleaning and other manual services) and Loconomics (professional and other services)[25].

Thus, most well-known platform co-ops are apparent adaptations of capitalist platforms. However, this does not have to be the only option and the description of currently existing co-ops does not have to be understood in a performative way in relation to what kind of platforms co-ops are desirable or feasible.

## Commons-based peer production (CBPP)

'Commons-based peer production' is a term coined by Yochai Benkler (2006) to describe CBPP as a non-proprietary, decentralised and collaborative way of producing

24   As a response to this approach, Peer to Peer Foundation and its related networks have been developing the concept Open Cooperativism. See Bauwens and Kostakis, 2014.
25   Faribnb; https://fairbnb.coop/, Modo: https://www.modo.coop/Fairmondo; https://www.fairmondo.de/global, Green Taxi Cooperative: https://greentaxico-op.com/, Stocksy: https://www.stocksy.com/, Resonate: https://resonate.is/, Up&go: https://www.upandgo.coop/, Loconomics: https://coop.loconomics.com.au/

informational goods typically through the Internet. Their outputs are common, which usually relates to a process of continuous improvement through iteration; conception and execution are decentralised; non-monetary motivations for engaging in the production process are crucial; and governance and the division of labour are defined in a participatory and non-hierarchical a way, with property and contracts as organisational drivers (Benkler, 2014:2; Bauwens, Kostakis and Pazaitis, 2019:6). Here, I would like to mention a sometimes tacit characteristic: authentic CBPP is also defined by the not-for-profit character of the whole productive process.[26] Bauwens and his colleagues even consider that CBPP (including but exceeding platforms) is a mode of production oriented to the accumulation of commons, instead of capital (Bauwens, Kostakis and Pazaitis, 2019).

In CBPP there are two types of workers. Behind-the-platform waged workers and non-waged through-the-platform workers. To compensate the former and pay for the infrastructure and other services, CBPP depends on donations usually channeled through a non-commercial foundation, such as the WikiMedia Foundation in the case of the Wikipedia platform. In turn, the sporadic and even chaotic participation of prosumers results in CBPP having very loosely defined membership borders.

## State agencies' platforms
Every national State commands dozens of public platforms[27]. What kind of work takes place in these environments?

At least two situations are relevant here. The first example concerns content platforms. Take BBC iPlayer (UK), Educar (Argentina) or any state-funded open-access repository. Here both workers behind and through the platforms are waged, the borders of the organisations are quite clear, and the outcomes are usually to some extent free – but not necessarily open, as derivative works of authorship are rarely allowed. The second type of case, which has attracted a great deal of attention, concerns the generation and collection of personal data by state platforms, such as Aadhaar in India, Urban Data Platform in Europe or any surveillance platform around the world. In this case, work behind the platforms is waged, whereas data-producing activities by citizens are to some extent similar to those of prosumers on for-profit social networks. Some of these datasets are free and tend to be openly available (e.g. national statistics), while many are not (e.g. fiscal, health and police records). Indeed, informational goods stored and managed by non-capitalist platforms, and particularly by State platforms directly dependent on politicians do not automatically result in emancipatory outcomes. Table 2 summarises a typology of work through non-capitalist platforms.

## Concluding remarks
In this article, I have tried to analyse the platformisation of productive processes in relation to the rise and development of informational capitalism. Characterising

---

26   This points to rule out of CBPP those production processes where prosumers contribute without expecting monetary compensations, but the platforms are for-profit. This is typically the case with profit from openness business models. See Lund and ****, 2020.

27   These platforms are not necessarily non-capitalist: in many cases States outsource services by contracting platform-owner corporations; however, in other cases these platforms contribute to nourish the public sphere of digital commons.

**Table 2: Work through non-capitalist platforms**

| Platform-running Organisation | Types of Workers | | Examples |
|---|---|---|---|
| Co-ops | Owners of Physical Goods | | Fairbnb, Modo |
| | Service Workers, Owners of Physical Goods | | Green Taxi Cooperative, Taxiapp |
| | Informational Workers, Owners of Informational Goods | | Stocksy, Resonate |
| | Service Workers | | Loconomics, Up & Go |
| Commons-based peer production | Prosumers of Informational Goods | Content | Wikipedia |
| | | Data | OpenStreetsmaps |
| State-Owned | Informational Workers | Content | BBC iPlayer Educ.ar Open-Access repositories |
| | | Data | Aadhaar Urban Data Platform |

**Table 3: Capitalist platformisation of work and labour**

| Capitalist Platformisation of Work and Labour | Behind | Industrial Work |
|---|---|---|
| | | Service Work |
| | | Informational Work |
| | Through | Self-Employed Owners |
| | | Gig Labour |
| | | Prosumers |
| | Beyond | Co-Ops |
| | | Commons-based peer production |
| | | State Agencies |

informational capitalism, resulted in a discussion of work and labour *behind through* and *beyond* capitalist platforms. Table 3 summarises the types of platform work identified in this article.

It is alleged that platform companies tend to be lean and hire a scant workforce behind the platforms. However, this is not necessarily the case for many well-known platforms. Strikingly, this part of platforms' workforce tends to be overlooked in most analyses of platform work. All platforms are included in the information sector, but the workers who are needed for putting the platforms together and keeping them running are not only those who perform informational work but also service and industrial workers.

Through-the-platform work is the core of platform work in capitalist companies. In turn, it includes three types of workers: self-employed owners, gig labour and prosumers. Self-employed owners buy, sell and rent physical goods (that they usually acquire in the market) and informational goods (usually produced by them). Although the productive processes take place *outside* the platforms, these intermediaries are usually the reason for the conception of the production process.

Gig labour refers to the most famous examples of platform work and labour. Some of these workers carry out a precarious version of informational work, either by producing authored works or by performing small tasks. The remainder are engaged in physical work, provided in public (transportation, delivery) or private (cleaning, repairing) settings.

Prosumers produce and consume informational goods as an unwaged activity carried out in their leisure time. They produce content (software, audiovisual content and texts), data and human attention – by consuming content and ads.

Different as they might look, varieties of through-the-platform work present some similarities. Workers are in all cases treated as anything but workers: independent contractors, creators, partners and others. Concepts related to non-commercial initiatives are used to refer to them by capitalist platforms such as communities and freedom. In turn, payments are in most cases not related to labour time and workers are owners of at least some means of production.

However, capitalist platforms are not the only way of organising platform work. Three types of organisations run platforms that go beyond capitalist relations: platform co-ops, commons-based peer production and state platforms. Already existing alternatives share some features: non-capitalist ownership systems, non-capitalist values and imitation of the technological core of capitalist platforms.

*© Mariano Zukerfeld, 2022*

## REFERENCES

Allmer, T., S. Sevignani, J.A. Prodnik (2015) 'Mapping Approaches to User Participation and Digital Labour: A Critical Perspective' in E. Fisher, C. Fuchs (eds) *Reconsidering Value and Labour in the Digital Age. Dynamics of Virtual Work Series*, London: Palgrave Macmillan.

Anderson, C. (2009) *Free, The Future of a Radical Price*, London: Random House.

Apte, Uday M., & K. N. Hiranya . (2007) Size, Structure and Growth of the US Information Economy in U. Apte and U. Karmakar (eds) *Managing In The Information Economy: Current Research Issues*, Norwell, MA: Springer Science and Business Media: 1–28.

Ardévol, E. I, Márquez (2017) 'El youtuber como celebridad mediática: entre la autenticidad y el mercado'. Rizoma, 5(2), 7287.

Armano, E, & A. Murgia (2014) 'The precariousnesses of young knowledge workers: a subject-oriented approach.', *Global Discourse,* 3 (3–4): 486–501.

Bauman, Z. (2005) *Liquid life*, Cambridge: Polity Press.

Bauwens, M., & V. Kostakis (2014) 'From the Communism of Capital to Capital for the Commons: Towards an Open Co-operativism', *TripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society*, 12(1):356–361.

Bauwens, M., V. Kostakis & A Pazaitis (2019) *Peer to Peer: The Commons Manifesto*. London: University of Westminster Press. DOI: https://doi.org/10.16997/book33

Benkler, Y. (2006) *The Wealth of Networks*: *How Social Production Transforms Markets and Freedom*, Boston: Yale University Press.

Benkler, Y. (2014) 'Peer Production and Cooperation in J. M. Bauer & M. Latzer (eds), *Handbook on the Economics of the Internet*, Cheltenham and Northampton: Edward Elgar. 91–119.

Berg, J, M. Furrer, E. Harmon, U, Rani & S. Silberman (2018) *Digital Labour Platforms and the Future of Work. Towards Decent Work in the Online World*. Report. ILO.

Berlin, I. (1969) *Four Essays on Liberty*, Oxford: Oxford University Press.

Bolaño, C. R. S. and E, Vieira (2015) 'The Political Economy of the Internet: Social Networking Sites and a Reply to Fuchs', *Television & New Media*, 16 (1): 52–61.

Boltanski, L. & E. Chiapello (2005) *The New Spirit of Capitalism*, London : Verso Press.

Boutang, Y. M. (2011). *Cognitive Capitalism*, Cambridge: Polity Press.

Burgess, J, J. Green (2018 [2009]) YouTube: Online video and participatory culture. Cambridge, Reino Unido, Polity Press.

Cafassi, E. (1998) Bits, moléculas y mercancías. En Finquelievich y Schiavo (comps.) *La ciudad y sus TICs: tecnologías de información y comunicación*. Buenos Aires: Universidad Nacional de Quilmes.

*Castel*, R. (2002) *From Manual Workers* to *Wage Laborers*: *Transformation* of the *Social Question*, New Brunswick, NJ: Transaction.

Castells, M. (1996) *The Rise of the Network Society. Vol. I of The Information Age: Economy, Society and Culture.* Malden, MA; Oxford: Blackwell.

Celis Bueno, C. (2016) *The Attention Economy: Labour, Time and Power in Cognitive Capitalism*, London: Rowman & Littlefield International.

De Groen W.P., I, Maselli & B. Fabo (2016) The digital market for local services: a onenight stand for workers? An example from the on-demand economy, CEPS Special Report 133, Brussels, European Centre for Political Studies. https://www.ceps.eu/ publications/digital-market-local-services-one-night-stand-workers-example-demandeconomy

Deleuze, G. (1992) 'Postscript on the Societies of Control.' *October* 59: 3–7.

Drahos, P. (2004) 'Who Owns the Knowledge Economy? Political Organising behind the TRIPS' (Briefing 32). Newton: The Corner House.

Ettlinger, N. (2014) The production of precariousness and implications for collective action: a reply to EmilianaArmano and Annalisa Murgia, *Global Discourse*, 3(3–4): 502–506.

Fisher, E. (2012) 'How Less Alienation Creates More Exploitation? Audience Labour on Social Network Sites', *Triple C: Communication, Capitalism & Critique*, 10(2): 171–183.

Fisher, M. (2009) *Capitalist Realism*, Winchester: Zero Books.

Foucault, M. (2010) The Birth of Biopolitics: Lectures at the Collége de France, translated by Graham Burchill. Houndmills, Hampshire: Palgrave Macmillan.

Frase, P. (2016) *Four Futures: Life After Capitalism*, London: Verso.

Fuchs, C. (2019) We need a full public service internet – state-owned infrastructure is just the start in *The Conversation December* 2, 2021. Accessed December 2, 2021 from https://theconversation.com/we-need-a-full-public-service-internet-state-owned-infrastructure-is-just-the-st

Fuchs, C. (2015) 'Against Divisiveness: Digital Workers of the World Unite! A Rejoinder to César Bolaño and Eloy Vieira', *Television & New Media,* 16 (1): 62–71.

Fuchs, C (2013) 'Class and exploitation on the Internet' in T. Scholz (ed) *Digital labor: The Internet as Playground and Factory*, New York: Routledge: 211–224.

Fuchs, C. (2011) 'Cognitive capitalism or informational capitalism? The role of class in the information economy' in M. Peters & E. Bulut (eds) *Cognitive Capitalism, Education and Digital Labor*, New York: Peter Lang: 75–119.

Fuchs, C. (2010) 'Labour in Informational Capitalism', *The Information Society European Journal of Social Theory*, 26(3): 179–196.

Fuchs, C. & S. Sevignani. (2013) 'What is digital labour? What is digital work? What's their difference? And why do these questions matter for understanding social media?' *TripleC: Communication, Capitalism & Critique*, 11(2): 237–293.

Fumagalli, A., S Lucarelli, E. Musolino, G, Rocchi (2018) 'Digital Labour in the Platform Economy: The Case of Facebook,' Sustainability, MDPI, *Open Access Journal*, 10(6): 1–16.

Gervais, D. (2002) 'The internationalization of intellectual property: new challenges from the very old and the very new', *Fordham Intellectual Property, Media and Entertainment Law Journal*, 12: 929–990.

Gig Economy (2019) 'How many gig workers are there? Gig Economy Data Hub'. Available at: https://www.gigeconomydata.org/basics/how-many-gig-workers-are-there

Graham, M. & J, Woodcock (2018) 'Towards a Fairer Platform Economy: Introducing the Fairwork Foundation', *Alternate Routes: A Journal of Critical Social Research*, 29. Retrieved from http://www.alternateroutes.ca/index.php/ar/article/view/22455

Hughes, J. (2006) 'Copyright and Incomplete Historiographies: Of Piracy, Propertization, and Thomas Jefferson', *Southern California Law Review*, 79: 993–1084.

Hughes, J. (2005) *Size Matters (Or Should) in Copyright Law*, 74 Fordham L. Rev. 575. Available at: https://ir.lawnet.fordham.edu/flr/vol74/iss2/10

Huws, U. (2014) *Labor in the Global Digital Economy: The Cybertariat Comes of Age*. New York: Monthly Review Press.

Huws, U. (2016) 'Logged labour: A new paradigm of work organisation?' *Work Organisation, Labour & Globalisation,* 10(1): 7–26. https://doi.org/10.13169/ workorgalaboglob.10.1.0007

Huws U., N.M. Spencer, D.S, Syrdal & K, Holts (2017) Work in the European gig economy: research results from the UK, Sweden, Germany, Austria, the Netherlands, Switzerland and Italy, Brussels and Hatfield, European Foundation for Progressive Studies, UNI Europa and University of Hertfordshire.

Huws, U., N. Spencer, M. Coates & K. Holts (2019) 'The Platformisation Of Work In Europe: Results from research in 13 European countries. Foundation for European Progressive Studies'. Retrieved from: https://researchprofiles.herts.ac.uk/portal/en/publications/ the-platformisation-of-work-in-europe-results-from-research-in-13-european-countries(0532e1a6-4bec-4cc9-a53f-f1336c1806fe).html

Huws, U & N. H. Spencer (2021) 'Platformisation and the pandemic: changes in workers' experiences of platform work in England and Wales, 2016–2021', *Seven ways platform workers are fighting back,* London: Trades Union Congress: 9–24.

Iñigo Carrera, J. (2003) El capital: razón histórica, sujeto revolucionario y conciencia, Ediciones cooperativas, Buenos Aires.

Jameson, F. (1994) *The Seeds of Time*, New York: Columbia University Press.

Jameson, F. (2003) 'Future City', New Left Review 21 (May/June 2003).

Kenessey, Z. (1987) 'The primary, secondary, tertiary and Quaternary sectors of the economy' *Review of Income and Wealth*, 33 (4): 359–85.

Langley, P. & A. Leyshon (2017) Platform capitalism: the intermediation and capitalisation of digital economic circulation, *Finance and Society*, 3 (1): 11–31.

Langlois, G., F. McKelvey, G. Elmer & K. Werbin (2009) 'Mapping commercial Web 2.0 worlds: Towards a new critical ontogénesis'. *Fibreculture 14*.

Lund, A. & M. Zukerfeld (2020) Corporate´s use of openness: Profit for free? London: Palgrave Macmillan.

Madariaga, J., C. Buenadicha, E. Molina, C. Ernst (2019) *Economía de plataformas y empleo ¿Cómo es trabajar para una app en Argentina?,* CIPPEC-BID - OIT. Buenos Aires, 2019.

Mason, P. (2015) *PostCapitalism: A Guide to Our Future*, London: Penguin.

May, C. and S.K, Sell (2006) *Intellectual property rights: a critical history,* Boulder, CO: Lynne Rienner Publishers.

Pasquinelli, M. (2010) The ideology of free culture and the grammar of sabotage in D. En Araya & M. Peters (eds) *Education in the creative economy. Knowledge and learning in the age of innovation*, New York: Peter Lang.

Petersen, S. M. (2008) 'Loser generated content: From participation to exploitation', *First Monday*, 13(3).

Pyoria, P. (2006) Understanding Work in the Age of Information. Finland in Focus. Academic Dissertation. University of Tampere. Department of Sociology and Social Psychology. Acta Electronica Universitatis Tamperensis 518. Tampere 2006.

Rifkin, J. (2014) *The Zero Marginal Cost Society: The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism*, New York: Palgrave Macmillan.

Ritzer, G. and N. Jurgenson (2010) 'Production, consumption, prosumption: The nature of capitalism in the age of the digital 'prosumer'', *Journal of Consumer Culture*, 10: 13–36. Available at: https://doi.org/10.1177/1469540509354673

Rullani, E. (2000) ¨El capitalismo cognitivo ¿un déjà- vu?,¨ Rodríguez, Emanuel y Sánchez, Raúl (ed) *Capitalismo cognitivo, propiedad intelectual y creación colectiva*, Madrid: Traficantes de Sueños.

Schmidt, F. A. (2017) *Digital Labour Markets in the Platform Economy: Mapping the Political Challenges of Crowd Work and Gig Work*, Bonn: Friedrich-Ebert-Stiftung.

Scholz, T. (2016) *Platform cooperativism*. Retrieved from Rosa Luxemburg Stiftung website: www.rosalux-nyc.orghttp://www.rosalux-nyc.org/wp-content/files_mf/scholz_platformcoop_5.9.2016.pdf

Scholz, T. (2017) Platform cooperativism vs. the sharing economy. *Big Data & Civic Engagement*, 47

Scholz, T. (ed) (2013). *Digital labor: The Internet as playground and factory*. New York: Routledge.

Sibilia Paula (2008) La intimidad como espectáculo. Buenos Aires: Fondo de Cultura Económica.

Simon, H. (1996) *The Science of the Artificial*, Cambridge: MIT Press.

Smythe, D (2006) 'On the Audience Commodity and its Work.' in M. Durham & D. Kellner (eds) *Media and Cultural Studies*, Malden: Blackwell:230–256.

Srnicek, N. (2017) *Platform capitalism*, Cambridge: Polity Press.

Srnicek, N. & A, Williams (2015) *Inventing the Future: Postcapitalism and a World Without Work*, London: Verso.

Standing, G. (2011) *The Precariat: The New Dangerous Class,* New York: Bloomsbury Academic.

Standing, G. (2002) *Beyond the New Paternalism: Basic Security as Equality*, London: Verso.

Tapscott, D. & A.Williams. 2007. *Wikinomics: How Mass Collaboration Changes Everything*, New York: Penguin.

Tarnoff, B. (2019) A Socialist Plan to Fix the Internet. In Jacobin Magazine, 30/11/2019. Available at: https://jacobinmag.com/2019/11/tech-companies-antitrust-monopolies-socialist

Toffler, Alvin (1980), *The Third Wave*. New York: William Morrow and Company.

Van Dijck, J. & D. Nieborg (2009) 'Wikinomics and its discontents: a critical analysis of Web 2.0 business manifestos', *New Media & Society*, 11(5): 855–874.

Vandaele, K. (2018) Will Trade Unions Survive in the Platform Economy? Emerging Patterns of Platform Workers' Collective Voice and Representation in Europe, Working Paper 2018.05. Available at SSRN: https://ssrn.com/abstract=3198546 or http://dx.doi.org/10.2139/ssrn.3198546

Varian, H. R. (1995) 'The information economy', *Scientific American*, 273(3): 200–201.

Vercellone, C. (2011) *Capitalismo cognitivo. Renta, saber y valor en la época posfordista*. Buenos AIres: Prometeo.

Wolf, E. (2006) 'The Growth of Information Workers in the US Economy, 1950–2000: the Role of Technological Change, Computerization, and Structural Change,' *Economic Systems Research,* 18 (3):221–255.

Zizek, S. (2010) *Living in the End Times*, London: Verso.

Zuboff, S. (2019) *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*, New York: Public Affairs.

Zukerfeld, M. (2013). Obreros de los bits: Conocimiento, Trabajo y Tecnologías Digitales, Colección Ciencia Tecnología y Sociedad, Bernal: Universidad de Quilmes.

Zukerfeld, M. (2014) 'Inclusive Appropriation and the Double Freedom of Knowledge: On the Capitalist exploitation of non-for profit software, contents and data producers. Special Issue "Free And Unpaid Work: Gratuity, Collaborative Activity And Precarioussness". *Sociología del Lavoro* (133): 144–158.

Zukerfeld, M. (2017a) *Knowledge in the Age of Digital Capitalism: An Introduction to Cognitive Materialism*, London: University of Westminster Press.

Zukerfeld, M. (2017b) The tale of the snake and the elephant: Intellectual property expansion under informational capitalism, *The Information Society*, 33 (5): 243–260, DOI: 10.1080/01972243.2017.1354107