RESEARCH ARTICLE

Putting the university to work: The subsumption of academic labour in UK's shift to digital higher education

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Abstract

This paper considers how the formal and real subsumption of academic labour in UK higher education are exposed and exacerbated by the move towards online teaching, assessment and communication. These processes have been expedited by the COVID-19 pandemic outbreak and attention is drawn to the technology-driven organisational and operational innovations that are transforming academic divisions of labour and labour processes. These changes, particularly in relation to the separation of research and teaching, and to the deprofessionalisation, modularisation, and outsourcing of the latter, are the focus of the paper. We argue that the formal subsumption of knowledge production (research) through commercialisation dovetails with a real subsumption of socially reproductive work (teaching) that is undergoing qualitative transformation in an increasingly marketised higher education sector. We show how digitalisation actively contributes to the growing standardisation and flexibilisation of work, deepens long-standing gendered divisions of labour, and dissolves even further the blurred work/life boundaries for precariously

employed workers. These new hallmarks of the contemporary subsumption present new challenges to workers and their collective organisations in Higher Education.

INTRODUCTION

Between autumn of 2019 and spring 2020, lecturers and professional staff in 74 universities undertook the longest industrial action in UK′s higher education (HE) history (Weale, 2020). The dispute hinged on the unresolved outcome of strike action in 2018 to defend pensions and a 'Four Fights' demand over sector-wide pay decrease, casualisation, intensified workloads, and enduring pay inequalities in relation to gender, ethnicity, and disability. In the final week of the industrial action, the World Health Organisation declared a COVID-19 global pandemic, with cases rising dramatically in the United Kingdom. HE workers, therefore, returned from strike to a radically changed workplace. By 23 March when the UK-wide lockdown was announced, UK universities had closed down most of their campus operations and moved toward emergency online instruction from home, and private education technology (EdTech) companies had moved from being a back street curiosity to the new shop front on UK universities' main street. Amidst government recalcitrance tragically revealed by more than 140,000 pandemic-related deaths, most universities opted for hybrid or fully online modes of tuition for the coming academic year, while the emerging economic crisis advanced cost-cutting lay-off of staff (Staton, 2020).

The expedient push towards digital modes of teaching, assessment, and communication both accelerated and brought into the spotlight processes of transformation of academic work recently underway. These changes and challenges are the focus of this paper. Amidst the hurried adjustments made by staff and students towards a 'new normal' of the pandemic, the formal subsumption of academic labour through commercialisation deepened structural and systemic inequalities within the HE sector while real subsumption processes transforming the labour process were exacerbated through the push to working online. The inequitable effects on students of a sudden and unplanned transition to online provision attracted considerable concern in relation to access to devices, secure Internet connections, adequate space and time for study; caring responsibilities, disability; and volatile domestic situations (Hall & Batty, 2020a). However, the implications for HE employees in similar working conditions have received relatively little attention. While the goodwill of staff was required to ensure the successful conclusion of the academic year for students, the dismissal of thousands of workers on fixed-term contracts (Batty, 2020) and ongoing forced redundancies of permanent faculty (Fazackerley, 2021), have dovetailed with the expansion of student intake (Adams, 2021) and partnerships with profitable EdTech companies (Williamson et al., 2020).

Following Hodder (2020), who cautions against dismissing the history and previous scholarship of disruption to labour processes from studies of novel technologies, we address the

recent move toward accelerated subsumption of academic labour through the introduction of online learning in its longer-term political-economic context. We frame it within the broader post-war changes to the political economy of the public university functions, resourcing, and management (see Harvie et al., 2022). To do that, the paper focuses on how new labour processes and technology-mediated public-private partnerships are posing new demands on the teaching, research and service functions of academic workers and shaping the organisation and experiences of academic labour.

Many developments discussed here, including substantive homeworking, were already present in academic settings before the pandemic (Mirrlees & Alvi, 2020), but their proliferation via utilisation of digital platforms has since induced more uncertainty, concern and contention. The opportunity provided through the market-driven technological 'enhancement' of universities has excited many senior managers (M. P. Ivancheva et al., 2020). However, evidence of already stressful working conditions and precarity (Erickson et al., 2020) exacerbating amidst the rapid roll-out of new platforms during the pandemic emergency (M. Ivancheva et al., 2020) urgently requires a deeper understanding of wider political and economic changes.

Against this background, the paper is an invitation for a novel theoretical and political lens to analyse—and act against—the radical, aggressive transformation of academic labour processes in HE. We integrate insights from our previous research and trade union engagement in HE to actively consider how a commercially-driven rise of digital technologies is unveiling further subsumption of academic labour within the changing HE 'market'. With a particular focus on how platformisation furthers and sustains enclosure of the knowledge commons amidst contemporary public–private administration, we seek to address three related questions:

- First, the paper asks, how have UK public universities been 'put to work' by public-private arrangements that have streamlined their 'core business' towards the formal subsumption of academic labour?
- Second, the paper considers the entry of commercial, digital platform providers into HE and enquires how are these technologies deepening new divisions of labour and further enclosing the knowledge created in academic production?
- Finally, in recognising the consequent dissolution of domestic and work boundaries, the modularisation of teaching, and growing precarity, the paper asks how is the real subsumption of labour reflected in academic labour processes, and what are the new grounds and motivations for worker resistance?

To answer these questions, in the first part of the paper we revisit and update the discussion of subsumption of labour with a view of academic employment in the marketised university. Used previously by scholars in the field (Hall & Bowles, 2016; Szadkowski, 2016), we find this debate foundational yet in need of further development when it comes to interrelated aspects of subsumption: the division of academic labour into research and teaching and role of digital technologies in the consequent modularisation of work and the encroachment on the social reproductive sphere of cognitive labour. In the second part of the paper, these changes to academic labour are treated in the context of the historical and current reforms in the UK HE sector. They provide an important backdrop to the two subsequent sections of the paper that link and update the theoretical work in labour subsumption to new knowledge enclosures dedicated, respectively, to formal and real subsumption. These enclosures involve the formal subsumption process of putting the university to work through functional marketization and

new managerial techniques to attract and award private finance; and the real subsumption processes under which the use of new technologies accelerate an organisational 'streamlining', modularisation and transformation of the academic teaching process. In the concluding part, we illustrate how both the formal and the real occur together in the contemporary university and suggest key lessons that can foster reflection and collective action in relation to the radical changes to academic working lives.

Subsuming academic labour in the marketised university

Karl Marx (1867) distinguished between the formal and real subsumption of labour under capital. In the former, pre- or noncapitalist modes of production are attributed a value within the mode of accumulation by the worker's labour becoming subject to a wage relation with the capitalist owner. Here, the material form of the labour process does not change but the worker's activity is monetised and becomes subject to capital logic. For instance, with the Industrial Revolution and the enclosures of the commons, labour (such as the artisan) is no longer valued for its particular skill, knowledge, and ability, but under the changed social conditions is valorised through its monetary return to capital. Once this process occurs, over time, surplus value is extracted by the capitalist through prolonging the duration of the working day, intensified and ever more alienating work tasks, and reducing leisure or socially reproductive time. Formal subsumption, then, becomes the precondition for real subsumption, under which, due to technology-enhanced intensification we see a transformation of the very labour process mode and its underpinning social relations.

In the transition from formal to real subsumption, technical innovation facilitates the division of complex labour into compartmentalised, simplified and deskilled tasks. The new production rhythm (while circumventing old forms and spaces of life and livelihoods) affects the labour process and serves to intensify exploitation (increase productivity) and appropriate an enhanced relative labour surplus (the amount of value produced per unit of time) (Marx, 1867, pp. 1034–1035). With this transformation, the knowledge and creativity of the labourer is stripped away and transferred to the machine (Fisher & Fuchs, 2015). The machine in turn enforces time-led and task-focused discipline on embodied labour, whose combined social knowledge becomes a 'direct force of production' (Marx, 1973, p. 706), a *general intellect* (Wood, 2005), that serves and is transformed by the demands of capital. The real subsumption is, therefore, predicated upon new labour divisions and hierarchies, transformed class relations, resetting the social conditions for the reproduction of wage labour and for consumption towards realisation of value (Harvey, 2017).

The deskilling, compartmentalisation of standardised and repeated tasks in the assembly line of the Ford factory (Braverman et al., 1998 [1974]) could be said to manifest the 'miserable foundation' to which labour- time was relegated, as the worker 'steps to the side' of a production process dominated the machinery (Marx, 1973). A response to the crisis of this factory system and the Taylorist scientific management organisation that underpinned it, however, has been the emergence of new modes of accumulation in which the intellectual and cognitive abilities of the worker have been recognised and hence enclosed as a source of value. A variety of concepts have accompanied the growth of this knowledge economy: 'cognitive capitalism', digital capitalism', 'communicative capitalism', 'biocapitalism', 'platform capital-ism' (Huws, 2019: 3). These have been used variably to chart the progressive forging of science, technology, and labour across the global economy through which the 'active interaction

between intellectual and cognitive knowledge of labour, on one hand, and the computerised machine on the other' (Antunes, 2016, p. 29) gives rise to emerging and uneven configurations of production, value extraction and subjective cognitive responses (Hardt & Negri, 2018).

Value subsumption and research work

Krystian Szadkowski (2016, p. 13) noted that, 'one of the obstacles that hindered the hitherto development of the Marxist analysis of contemporary transformation of the HE sector was the deeply held belief in the unproductive nature of labour within the sphere of education and the production of knowledge'. Szadowski illustrates how the privatisation and capitalisation of HE expand the boundaries of value production, by the ways in which academic research production is subsumed under a new regime of cognitive capitalism. In the contemporary economy, the cognitive capacity as accrued by and embodied in the 'living' worker is of increasing value to capital. In this sense, the employment of the knowledge worker, especially with regard to research outputs and fundraising capacities being attributed metric value (evaluations, ranking, promotion, awards for recognition and forms of prestige etc.), can be considered as formal subsumption in that the particular set of skills, tacit knowledge and ability that have been formed and used before employment are brought into the wage relation (Szadkowski, 2016, p. 16).

While the turn to the knowledge economy means that living, cognitive labour may in one sense 'dominate' dead labour (in the form of machinery), the relationship is subject to strict (and increasingly digitised) social control and governance with implications for the 'cognitive, social and cooperative components of living labour' (Hardt & Negri, 2018, p. 419). Here, the performance of work evokes new, interdependent relations between formal and real subsumption of labour, mediated through new managerial techniques and emerging information technologies that result in monotonous, repetitive tasks of work. Szadkowski exemplifies this in the metadata produced via publication metrics that discipline academics into spending unpaid hours submitting articles to the commercial publishers producing these same metrics, generating surplus for profit-seeking companies (2016, p. 17).

The competitive pressure that results from the above relations alongside massified IT availability subjects HE workers to the dissolution of working and leisure boundaries as documented elsewhere in the contemporary knowledge economy (Huws, 2019). Marx (1867) observed how machinery translated the 'whole lifetime of a worker and his family into labour-time at capital's disposal for its own valorisation'. In a similar vein, Hall and Bowles (2016), while resisting a detailed interrogation of the labour process in their analysis of subsumption and academic labour invite further analysis of how technology subjects the worker to the 'social totality' of capital. For Fisher and Fuchs (2015) the commodification of cognitive labour-power, whereby working days are lengthened and the domestic sphere is encroached upon for further value extraction, gives rise to a 'life subsumption' that merges formal and real subsumption. Technology is central to these new forms of accumulation that infringe upon productivity and household reproduction.

Value subsumption and teaching work

Learning of how technologies infringe upon the life–work balance, on cherished research time, or of how research production is formally subsumed under capitalist wage relation through

evaluation metrics, is important, but insufficient. The study of HE requires an updated understanding of capital's encroachment on the social totality (Hall & Bowles, 2016; McCann et al., 2020): how the social costs of reproducing the desired labour-power are shifted further to the private and domestic spheres of labour. Autonomist feminist critiques have long taken issue with Marx's statement that 'the value of labour-power is the value of the means of subsistence necessary for the maintenance of its owner' (Marx, 1867 in Federici, 2019), that is, labour-time necessary for the production of the commodities that the workers consume. 'At no point in Capital', Silvia Federici notes, 'does Marx recognise that the reproduction of labour-power entails women's unpaid domestic work' (Federici, 2018, p. 470). As social reproduction has become the central lens for feminist Marxist accounts of formal and informal labour worldwide (Mezzadri, 2019), it is useful prism through which to consider incumbent critiques of academic productivity.

Confined as they are to the focus on research production, the above-cited critiques of formal subsumption largely exclude reproductive labour from the discussion of subsumption processes: teaching, pastoral and student support lie paradoxically outside the general discussions of the subsumption of academic labour under capital. Indeed, this imbalanced focus could be said to reflect contemporary academia more generally in that certain types of academic labour are valorised over others (see also Harvie et al. 2022). The recent pandemic served to highlight divisions of labour between more stable and work-secure, male-dominated, and highly valued norms of production (research, publications and fundraising) and feminised and casualised forms of social reproduction. The latter do produce value for capital, through educating the labour force; for example, but the practices involve work that cannot be easily valorised within free market capitalism (e.g., teaching and pastoral care). As will be shown later, these divisions are the catalyst not only for further compartmentalisation and exploitation of 'teaching-only' labour in academia (M. Ivancheva et al., 2020) but pave the way to new forms of value capture and labour control via newly introduced technologies.

These developments are part of the deeper processes of 'putting the university to work'; extracting surplus from productive labour while availing of technology to transform the social relations within education to reduce costs in ways further explored here. The intention here, therefore, is to build upon these ongoing debates by providing some examples of 'what it is that is being subsumed into what' (Harvey, 2018) in HE, at a range of scales and across reproductive and productive spaces of labour.

Putting the UK university to work: From massification to marketisation

While discussions of the university's marketisation have dominated the academic debate for the last few decades (Marginson, 2013; Wright et al., 2020), a tendency to treat the university as a rather monolithic institution subject to 'new' public management belies a sharper analysis of the various tensions that UK HE is subject to. For a brief moment in history, the UK public university model was able to combine the function of the university as a social tool for redistribution, through widening access and dedicated teaching, with its research excellence (Harvie et al., 2022, p. 606). Digital technologies have polarised rather than reconciled these two functions.

The UK developed one of the globe's most inclusive public university systems, which massified access to even the most elitist of institutions. From the mid-19th century onwards, a

number of medical, science and engineering colleges were awarded royal charters and became secular universities, known as 'red brick colleges'. University gates gradually opened not only to men from wealthy families, but also to women (Dearnley, 2018), members of the colonial elites (Pietsch, 2013) and, gradually, to students from working class and ethnic minority backgrounds (Carpentier, 2018). Massification accelerated after WWII with the foundation of new universities and colleges of advanced technology, which were eventually granted university status. With the Further and Higher Education Act in 1992, this binary system was abolished: all former polytechnics, numerous colleges of higher and further education and newly established universities received the status of universities, now known as 'post-1992' institutions. All these now amount to over 160 public degree-granting institutions of higher learning, and account for the steep rise of student intake (Carpentier, 2018). The push for massification was paralleled by efforts toward 'research excellence' assessed through global and national university evaluation, producing a powerful image of the public university system in a capitalist democracy, offering universal access, research excellence and academic freedom alike.

The oil crises of the 1970s prompted economic recession which was reflected in the UK public sector in the form of austerity (Traianou, 2016) and in HE via the restructuring of university administrations and stark cuts in funding. This restructuring was paralleled with the rise of new public management as a market-driven, performance-dominated set of principles overseeing cost-effective governance of public services and resources, from which HE has not been spared (Marginson, 2013; McCann et al., 2020; Wright et al., 2020). Using its structurally centralised position, the government implemented top–down public sector reforms in ways that were impossible in federal states like Germany or the USA (Brandist, 2017, p. 585), and incentivised top–down institutional as well as sectoral governance (Parker, 2014). With deepening economic liberalism and There Is No Alternative (TINA) ideological dogma, successive UK governments repositioned HE as a competitive service under new public management that used top-down, or 'total administration' (McCann et al., 2020 after Marcuse, 1986). The marked shift prioritised performance, cost-cutting and 'streamlining' of the academic labour process, while following EU-wide incentives of deepening the link between HE and national economic growth (Carpentier, 2018; Wright et al., 2020).

To foster competition between institutions, neoliberal policies involved the end of the block grant to universities, the introduction and gradual rise of student fees, performance management through metrics, installing competition as an organising principle of research, and the takeover of core functions of the university by private corporations and outsourced services (Lynch & Ivancheva, 2015). Power was centralised into a management structure more conducive to business enterprise than a public service (Parker, 2014; Traianou, 2016, p. 43). The decoupling of research from the core budget (now generated from student fees) meant universities no longer had secure research budgets but scholars had to cyclically compete for external funding (M. Ivancheva, 2020). Consequently, the last two decades have seen a huge redistribution of public monies to the private sector in four ways:

First, through taxation, the public bears the cost for research budgets and university running costs. These go into widening tiers of management and to competition for research grants, a process that requires enormous human and financial resource investment into incessant applications with a marginal chance of success, usually privileging a handful of historically advantaged universities, social groups and classes (Academics Anonymous, 2014). While public funding continues to be central to university operations funds, significant sums from successful research grants go towards overhead costs. A large proportion of this income, along with the repaying of high-interest loans from private equity firms, is directed into 'capital

investment' projects: infrastructural development, services, and spaces (UUK, 2016). Rarely of immediate benefit to the public (Collinson, 2019; Gore, 2018), these represent a further leap towards the private sector that is motivated by government-driven cuts of some £120 million in operations funding and expectation for universities to finance up to 75% of their capital expenditure from their own cash in 2018 as opposed to 31% in 2014–2015 (UUK, 2016).

Second, the public increasingly pays for an educated workforce in the form of student tuition fees and absorbs the financial risk through debt incurring loans for living cost, repackaged as debt and sold on to private investors (Liang, 2017). Capped at £9000 for Bachelors' studies for home students, student fees in England and Wales exceed £20,000 per year for non-EU nationals attending some Masters' programmes. Loan programmes, covering subsistence, require debt repayment for graduates employed above the living minimum of £21,000 per year, reinforcing the provision of career-related courses (Metcalfe, 2020). Teaching is measured in 'value-for-money' benefits rather than its contribution to student empowerment (Tomlinson, 2018). Student accommodation, provided at above market value prices (Osborne & Barr, 2018) becomes an important source of university investment and private sector income. As student debt stands at £177bn (Statista, 2021), new private dorms are often run by offshore companies generating a £2.5bn annual profit (Adams, 2020).

Third, universities increasingly take over the burden of training the labour force from the private sector (Boden & Nedeva, 2010). The post-1992 transformation of polytechnics into universities has been paralleled with global processes utilising HE increasingly as a vehicle of economic growth (Carpentier, 2018). While 'post-1992' vocational training colleges were turned into universities, now universities are (re)turning into vocational training roles, duly providing a skilled labour force in line with short-term market demands, and student debt leaves graduates less autonomy or agency when entering the job market or resisting unfavourable working and welfare conditions.

Finally, the expansionist logic of university campus real estate growth under competitive commercial pressure, and the streamlining of the academic knowledge towards industrial utility crystallise in the global phenomenon of 'innovation districts': urban and 'SMART' spaces, networked through digital technologies. These urban transformations rely on piecemeal composite sources of investment rather than sustained support and thus large public universities in the UK have become 'anchor institutions'. They bring in public funding, centrally located real estate, scientific expertise and facilities and a constituency of workers and learners, functioning as both consumers and big data producers in their own 'smart' work and study places into the public–private partnerships that coordinate such developments (Burton et al., 2019; Cowley & Caprotti, 2019). The participation of universities in these districts has been praised by private firms (ARUP, 2018) and media (FT, 2019) as pivotal to economic growth. Where public–private partnerships are struck on terms most favourable to the private partner (Collinson, 2019), however, concerns for how urban social dislocation, unsustainable estate expansion and financialisation jar with the 'public good' have grown (Melhuish, 2019). The process impacts on and subsumes academic labour in different ways and infringes on the rights of workers subject to diminishing securities and protections as explored further below.

Formal subsumption: Commercialising universities and academic labour processes

The implications of the above transformations in relation to the contemporary forms of intellectual commercialisation and the broader processes of surplus extraction in universities

contribute to the formal subsumption of academic labour. Public universities are increasingly commercially-driven employers of workers, and academic labour processes are streamlined—with the help of technology—to produce profit for private sector actors rather than value for the public good.

In public universities, both research and education are instrumental to the academia-industry nexus, increasingly imbued with the presence of large businesses (Parker, 2014). Academic researchers are rewarded for innovative cognitive labour. Their formal subsumption, however, finds them accustomed to questions of the practical application of their knowledge to 'external users,' or to research grant applications, within the discernible market framework (Traianou, 2016, p. 42). Academics often need to prove they work with various, and commercially-minded, 'stakeholders' and to predict the 'impact' of research activity, recorded through new platforms of algorithmic management (Knowles & Burrows, 2014; Ovetz, 2020).

A commercially founded benchmark, 'impact', often means a form and motive for scientific production averse to academic freedom. Salient examples of this are the notorious medical trials in the United States that have long served the tobacco and sugar industries (Bero, 2019), but with digitalisation, this also includes recent cooperation between academics and BigTech giants in studies that raise concerns over academic independence. The Google-funded research on ethics of artificial intelligence (AI) at Oxford (Williams, 2019), the Amazon-sponsored Centre on AI at Columbia University (Evarts, 2020), or Uber co-authoring articles concealing the problematic sides of the gig economy (Horan, 2019), are three cases in point. Impinging on the freedom of academic knowledge production, industrially funded research contracts affect academic labour processes: clauses giving business stakeholders the final say on whether the research can be published jeopardise the prospects for early career researchers' under pressure to produce research outputs within tight time frames (Bero, 2019). In this scenario, the independent, critical inquiry of the knowledge worker 'steps to the side' for a more instrumental knowledge production in the service of commercial enterprise.

Alongside this creation of 'useful' knowledge to industry, universities are expected to align education with employability expectations: here too research council funding is increasingly tied to priorities set in concert with private industrial strategy, rather than scientific pursuit (Traianou, 2016, p. 42; Wright et al., 2020). Funding allocations weighted towards science, technology, engineering and mathematics (STEM) subjects, natural and life sciences are often stubbornly fixed to Euro-centric, developmentalist, neocolonial frameworks, and irrefutably relegate social sciences that face ongoing uncertainty and closure (Lynch & Ivancheva, 2015). In the consequent streamlining of provision, academics are discouraged from 'straying away' from established disciplinary dogmas as competition between universities, departments and individuals is measured through funding-based and discipline-bounded audit of outputs (Brandist, 2017, p. 586). STEM scholars too are affected by this streamlining as ongoing disputes over forced redundancies in Health (University of Liverpool) and Mathematics (Leicester University) show (Gilbert, 2021).

Enter technology, and the competitive commercialisation of research is measured by increasingly automated (yet time- and resource-consuming) individual or institutional performance. Collected and collated via online providers of publication metadata and bibliometric indicators such as WebOfScience and Scopus, metrics champion certain forms of research outputs in journals associated with commercial publishers and based out of the Anglo-American academy, while rendering others invisible. The UK Research Excellence Framework (REF), a UK-wide cyclical peer-review process, also makes research funding subject to comparisons of 'world class excellence' (Wells, 2012), as do world rankings. Research

funding is tied to enormous human and financial resource investment that guarantees visibility in these commercial bibliometric databases and rankings. Success too often privileges a handful of senior permanent members of staff at historically advantaged universities (Academics Anonymous, 2014) that score highly within allegedly 'objective' databases, whose citation metrics are a benchmark for today's academic enclosures. Moves to break the monopoly of commercial publishers, charging universities millions to access their own production demonstrate how the surplus from academic labour benefits businesses (Resnick, 2019).

This progressive enclosure of academic knowledge production and the competitive growth model that now underpins each of the UK institutions has a marked signature on internal, stratified divisions of labour that polarises research and teaching work. While institutions boast rankings based on research output to attract students, these students are less and less likely to be taught by the highest 'valued' academics who boost these ratings. Those who regularly win prestigious grants and have high international visibility are afforded (or rewarded) additional research time free of teaching commitments (M. Ivancheva et al., 2019). To have such 'world-leaders' on the payroll can make or break a department and its university position in global rankings with implications for competitive funding redistribution. Restrictive eligibility criteria make only permanent faculty eligible for leading on major grant applications, while REF criteria actively dissuade equitable collaboration and incentivise senior staff to take credit for work developed by low-paid fixed-term researchers, deepening the hierarchical culture of patronage (Megoran & Mason, 2020, pp. 19–21). The few postdoctoral and research fellows that are fortunate enough to find paid work in the sector endure ambiguities while often working hyper flexibly or migrating between several posts. This pattern results in 'core' faculty staff, who would be conventionally engaged in teaching at equal measure as research, being removed from 'core' activities of education, teaching, pastoral care less valued in decisions on promotion, funding, department or job cuts. The modularisation, administration and expectation of these lesser-valued roles are resulting in the real subsumption of academic labour.

Real subsumption: Transforming academic labour relations

Academic labour has historically enjoyed relative autonomy and flexibility within its formally subsumed condition (Lynch & Ivancheva, 2015). Many academics have often chosen to work from home and have long negotiated remote research time and physically present teaching. These dynamics have been subject to more recent pressures, as the social restrictions stemming from the COVID-19 outbreak have both accelerated and brought fresh focus on technologically facilitated transformations. The formal subsumption of academic labour outlined in the previous section has necessitated the reshaping and transgression of public–private boundaries into a total demand on the social time of academics also outside of work (Courtois & O'Keefe, 2020). Given that formal and real subsumption can happen simultaneously once the labour process is commercialised, it is important to see if and how real subsumption takes place. Dissolving further the boundaries between work and private time and space, digital technologies play a key role in changing the structures of work by accelerating processes of deprofessionalisation, outsourcing, and automation of academic labour in a HE system already heavily reliant on unpaid, undervalued labour (M. Ivancheva et al., 2020). Thus, while competitive pressures routinely force academic workers to cut leisure time and extend the working week, there are spheres of cognitive labour radically transformed by commercialisation that

remain largely neglected in the debates around subsumption: academic teaching and student support, that is, reproductive labour.

Normative assumptions of the positive introduction of digital innovation overshadow the quality and experience of the contractual relations that underpin it (Alevizou, 2015). Putting a price on labour that cannot be easily valorised within the free market system underpins efforts to monopolise cognitive labour and market an 'elite' good as scarce and exclusive (Marginson, 2013). Rubbing up against a self-branding of universities as coveted and exclusive spaces of learning is the possibility of widely accessible education via online platforms and the promise of smooth, uninterrupted information flow (Martínez-Guillem & Briziarelli, 2020). After all, distance learning through technological advancements—letters, radio, audio and video cassettes—has historically widened access to 'atypical' students, workers, women, people in remote locations, and those with disabilities or caring responsibilities. Thus, for a highly marketised university sector, the provision of teaching via the use of digital technologies requires both new administrative instruments for the capture of produced knowledge and new commercial arrangements for (paid) access to university brands (M. P. Ivancheva et al., 2020). Technology provides for new education markets that universities seek to capture, and new investment opportunities for private providers whose products include not just course delivery but facilitate the monitoring, appropriation and replication of academics' cognitive outputs.

The roll-out of massive open online courses (MOOCs), short-course, online degrees and micro-credentials involve a new, versatile language as 'online content curator', 'curriculum designer', 'MOOC forum moderator', 'research supervisor', are introduced by universities and private companies alike. Before the COVID-19 pandemic, many universities were already engaged in MOOCs, free and credit-bearing short courses and full online degrees involving public-private partnerships. Standardisation in accessible, repackaged teaching modules is offered as a solution to unruly time and space restrictions and also, on evidence, to relatively high labour costs in HE. Universities have long outsourced marketing, IT, administrative, catering, procurement and maintenance services (Komljenovic & Robertson, 2016). The process of disaggregation of the curriculum and offering it in shorter or recompiled forms known as 'unbundling' or digital disruption, however, facilitates outsourcing of academic labour that changes intrinsically the core functions of universities.

Nowhere is this more evident than in the engagement of Online Platform Management companies (OPMs). These represent a sector of around 60 providers globally sharing a market rising from $1.7 billion in 2015 to $5.7 billion in 2020 and expected to reach $13.3 billion by 2025 (HolonIQ, 2021). In return for some start-up capital, risk absorption, marketing and recruitment aid, OPMs get 50%–70% of all course fee revenue, carried out by the partnership, which forms core (teaching) incomes of the universities (Newton, 2016) and access to profitable big data (Williamson et al., 2020). They target working professionals, especially growing Global South middle-classes (M. P. Ivancheva et al., 2020). Many university contracts with OPMs are made without staff consultation and are not available to the public: their use of staff and student data remains opaque (Newton, 2016), and their employment policies remain largely outside both academic and trade union debate. Unlike other EdTech companies, OPMs offer not just devices and services. Hidden behind university brands they offer core HE functions: curriculum development, teaching and learning support. Amidst intense job competition, OPM's routinely hire technically outsourced, academically trained staff on precarious, underpaid, short and fixed-term contracts to do core teaching and pastoral care central for the reproduction of the university community (M. Ivancheva et al., 2020).

Through the processes outlined above, teaching is first separated from more highly valued research in a hierarchical division of labour. The teaching component is then broken down into modularised content. Lecture recording and immediate transcription software have made this content more easily and relatively cheaply reproducible through curated spaces called Learning Management Systems. With a large part of the student–teacher organic pedagogy removed, the teacher is confronted by a series of repetitive tasks, mediated via the platform, and accompanied by the online, digitised forms of application, submission, evaluation and feedback. The knowledge worker, now seated, crouched, appended to the laptop, adopts the morphology of many other workers of the digital age. The technology-mediated teacher–student relation is increasingly standardised, fully monitored and indeed disciplined by algorithmic management (Ovetz, 2020). The disembodiment of the pedagogical process requires further subsumption of academic labour as workers are anticipated to concede their intellectual property and performance rights (Martínez-Guillem & Briziarelli, 2020).

Thus, labour saving strategies that historically motivate technological introduction are also apparent in the contractual quality of the contemporary academic worker, subject to cuts to the unit cost of labour in the sector. Not even counting outsourced OPM-hired faculty working within university-OPM partnerships, in 2017–2018, a stunning of 67% researchers and 49% teaching 'only' staff in the UK public university sector were employed on fixed-term contracts; together with 70,000 'atypical' contract staff, they form a reserve army of academics doing a significant part of UK universities' teaching and research (Megoran & Mason, 2020, p. 6). In this scenario, staff members newly engaged in teaching confront a double bind. University competition for student numbers grows class sizes with implications for workloads, but highly valued research-active staff are bought-out increasingly by precariously-hired teaching-only faculty (M. Ivancheva et al., 2019). These are in turn largely responsible for student mentoring and pastoral support and responsive to alarming levels of student anxieties already before the global pandemic (Shackle, 2019) on top of the documented stress-induced mental health epidemic among academics (Morrish, 2019).

Without extra remuneration (at universities) or as underpaid flat-rate labour (at OPMs), pedagogically exigent and time-consuming courses, often drawing on the personal space (home-based work, or self-resourced coworking spaces) and facilities (laptop, Internet, software), are delivered mostly by precarious faculty. With systems of welfare, child- and elderly care curtailed by privatisation, care- or gender-specific biological pressures impede flexibility and geographic mobility to put women in academia at a particular disadvantage and trap them into precarious teaching arrangements around a 'chosen' locality (M. Ivancheva et al., 2019). It is now abundantly clear that in the UK women and minority ethic faculty take the most precarious teaching-only contracts (Megoran & Mason, 2020). Furthermore, the provision of programmes where neither the teacher nor student need be physically present on campus also represents significant cost-savings in terms of space facility. Together with the modularisation of teaching into 'bite-sized', disembodied content (Newton, 2016), these new predicaments qualitatively change labour processes and social relations of teaching and pastoral care and produce real subsumption of academic labour.

With gender, ethnicity and disability increasing the prospect of an employee enduring precarity (Megoran & Mason, 2020), the onset of the COVID-19 pandemic brought real subsumption-induced inequalities into stark relief. The less than fulfilling educational experience of new platforms by front-end users, staff and student alike, meant digital technologies were perceived as a symptom of a sickness, rather than a solution (Berardi, 2020). And, while the expedient transition of emergency remote teaching to 'online education'

promises to normalise quick-fix 'solutions' it did not happen without resistance. For instance, under pressure from the staff, Durham University had to renege on an agreement with Cambridge Education Digital (CED) to offer fully online degrees from autumn 2020; CED had assured that university-hired staff only needed six hours of training to design and deliver such degrees (Hall & Batty, 2020b). Yet, while universities have had to prolong the promise of physical encounter to attract and retain fee-paying students, the pandemic has been operationalised as the reason for redundancies and hiring freezes (Batty, 2020) which provide conditions for hiring of casualised, undervalued and underpaid, 'really subsumed' workers by universities and OPMs. Yet, while forced redundancies of permanent staff have met collective action, with multiple University and College Union balloting for, or taking, strike action (Gilbert, 2021), technology-induced real subsumption of casualised, outsourced work remains largely outside trade union action plans.

Concluding remarks—avenues of resistance?

The formal subsumption of the university into industry-led and marketised research and education involves a streamlining of function and administration with implications for academic labour. The inherent drive to extract surplus value and the related corporeal and subjective subsumption of labour is belied by the intensity of efforts to earn value from capturing the intellectual capacities as 'property' from industrial-led academic research while maximising returns from teaching labour. The division of research from teaching 'frees up' the most value-productive research labour for high-end innovation and patenting, symbolised—if not always carried out—by senior, male, STEM scientists. Teaching is, in turn, subject to standardisation, modularisation and a devaluation of (often feminised and precarious, by now outsourced) labour that performs the social reproductive work within education, such as student-facing teaching work, supervision, counselling and pastoral care. The subdivision of 'mental tasks' into 'executive, clerical, professional, technical functions' of the cognitive worker (Huws, 2019, p. 4) is accompanied by further automation of the 'manual' hands-on tasks of academic teaching. The opportunities provided by digital technologies for remote working and labour cost savings have been used by HE senior managers to lay down the red carpet for OPM companies and other private partners.

The enforced lockdown under COVID-19 has 'normalised' this real subsumption of academic labour and shed light on what precarious academics have long been experiencing: reliance on the home as an essential provider of not just variable capital (labour) but fixed capital (materials, work desk, energy, phone); and the dissolution of work/leisure boundaries towards total subsumption. What is revealed also is a stark stratification and polarisation of the workforce where a trade union will have members on six-digit salaries alongside those reliant on food banks to survive. While even the most secure academic work is increasingly mediated through digital platforms, intensified job competition among hire freezes and redundancies is dovetailing with an increasing proportion of insecure, 'gig' jobs within HE.

Contradictions emerge, however, and the loss of sensibility and poor pedagogical experience shared by staff and students is challenging the pervasiveness of online learning, while the stubborn claim by staff to performance rights in relation to online provision continues to provide obstacles to streamlined processes. Universities must continue to negotiate the corporeal attraction of student to campus and real estate investments while cornering new, online markets through cost-saving teaching. It is evident: ongoing casualization, a deprofessionalization

and outsourcing of academic work are being facilitated by new automation and platform technologies that open a key arena for social struggle against total labour subsumption. This new frontier for trade union activity that is currently poorly served by collective bargaining. As a period of economic uncertainty faces the UK HE sector, sectoral trade unions concerned with job losses and deteriorating job conditions must also urgently address the technology-mediated subsumption of academic labour.

CONFLICTS OF INTEREST
The authors declare no conflicts of interest.

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