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Making markets through digital platforms

Making markets through digital platforms: Pearson, edu-business, and the (e)valuation of higher education

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Abstract   Digital platforms have begun to infuse the higher education landscape, merging commercial business models with existing political demands for universities to become more data-driven, competitive, and market-focused. This article presents a case study of the education business Pearson and its expansion of the digital platform as a model for global higher education reform. A key 'edu-business' in the 'global education industry', Pearson has pivoted to online program management platforms, on-demand digital learning platforms, and intensive mobilization of data analytics to enact its strategic business priorities. These market devices and strategies position Pearson as an authoritative source for both the evaluation of performance in HE and the valuation of HE as a market. The analysis foregrounds the micro-processes involved as Pearson has sought to make, exploit, and maintain market opportunities in HE, demonstrating how the market form of 'platform capitalism' is being reproduced by commercial power-players in the global higher education industry. As a key device in the sociotechnical arrangement of markets, the digital platform is a participant in HE reforms that are intended to align the public mission of universities with the private interests of platform capitalism.

Keywords   data, edu-business, higher education, marketization, Pearson, platform

Contemporary higher education (HE) is undergoing significant transformations as digital technologies, data analytics, metrics and other techniques of evaluation are advanced across the sector by governmental and businesses actors. Processes of marketization, privatization and consumerization of HE mean universities are increasingly focused on achieving market value through competition, performance ranking, consumer demand, and return on investment (Busch, 2016), often enabled by digital technologies (Selwyn, 2014) and infrastructures of measurement (Sellar 2017). Data, metrics, performance rankings and accountability ratings have become driving 'engines' of HE, cultivating powerful effects on how universities are evaluated and valued (Espeland & Sauder, 2016; Muller, 2017). To be competitive

under 'quantitative control of the academy' (Burrows, 2012, p.356), universities are encouraged to advance use of digital infrastructures and platforms, particularly by 'unbundling' their services into component parts and exposing them to market forces for 'rebundling' by outsourced commercial companies (McCowan, 2017; Muellerleile & Lewis, 2019). Private digital providers have rapidly expanded across HE systems as part of a 'global education industry' (Verger, Steiner-Khamsi & Lubienski, 2017). Although HE reform remains a project of central government, its enactment is being dispersed to data infrastructures, digital platforms and the technology companies that produce them, with the support of a diverse cross-sectoral array of 'arms length' HE agencies, think tanks, consultancies, private companies and coalitions (Williamson, 2019). Together, these organizations and technologies are making new digital markets for services and products in higher education, thereby reshaping universities, subjectivities, and the sector itself to act in more market-like ways (Komljenovic & Robertson, 2016).

Although 'marketization' has a long history in HE, the novel digital developments advancing across universities demand critical analyses unpacking the specific market-making activities of major contemporary education businesses, and the emerging effects of these new markets on the sector. This article brings together studies of digital platforms with sociological approaches to markets as a framework to examine the platform-building and market-making activities of the education business Pearson. A global, multibillion dollar market actor, in recent years Pearson has pivoted to digital education products and services in its pursuit of new market opportunities (Junemann & Ball, 2015; Sellar & Hogan, 2019; Williamson, 2016). Riep (2019, pp.408-409) sees Pearson as a 'paradigmatic case' of how 'edu-businesses attempt to legitimate and secure their profit-making activities in education' and 'advance capitalist restructuring in education'. It has developed a plethora of market devices and strategies to accomplish this aim, most notably digital platforms, as it seeks to transform HE into a market amenable to its expanding product portfolio. The aim of this article is to examine the specific role of digital platforms in the market expansion of multinational edu-businesses.

With Pearson as the empirical focus, the article contributes to emerging research 'unpacking market-making processes' and the complex social, political, economic and technical strategies and practical effort required for the design and maintenance of markets in higher education (Komljenovic & Robertson, 2017, p.289). Markets, in short, need to be made—in concrete contexts and conditions—and their realization and maintenance includes the creation of particular products. Specifically, 'market devices' play key roles as tools, artefacts, objects, technologies, and material things that take part in the construction of markets (Muniesa, Millo & Callon, 2007). As Muniesa et al (2007, p.5) note, 'The ways in which market devices are tinkered with, adjusted and calibrated affect the ways in which persons

and things are translated into calculative and calculable beings'. Put in the HE context, the ways market devices are configured can affect how universities, staff and students are translated into calculable objects, evaluated and ascribed value, with significant implications and effects on how they operate and function. As an agent of both 'valuation' and 'evaluation' (Lamont, 2012), Pearson participates in the evaluation of higher education, where universities are approached as competitive market actors seeking institutional advantage and position, and also in ascribing 'value' (usually monetary) to different practices and processes of HE.

As an agent of (e)valuation in higher education, Pearson is seeking new ways of evaluating the worth of HE, creating monetary valuations of HE as a market, inserting new value-making products into the sector, and thereby reconfiguring HE itself. The analysis foregrounds the micro-processes involved as Pearson has sought to make, exploit, and maintain markets in HE, highlighting how marketization is accomplished through digital platforms and associated market devices, strategies and discourses. It is based on extensive examination of a large archive of documents and texts produced by Pearson in the period 2012 to 2019, as the company underwent strategic 'digital transformation' of its core business. The documents includes company annual reports, press releases, published interviews, company media coverage, in-house research reports, commissioned reports by external experts, market research findings, reports produced in partnership with other organizations, the company website, specific product webpages, and the Pearson blog. Five key market-making processes associated with digital platforms are identified, illuminating the painstaking work involved by a single edu-business to establish markets *for* and *through* digital platforms. The conclusion draws some critical implications about how digital platforms participate in HE marketization, and how market-making is remaking the sector to conform to the logics of 'platform capitalism'.

Platform edu-business
'Platform capitalism' describes the business model and market form of the worldwide web since the appearance of digital platforms as the dominant spaces of capital accumulation on the internet (Srnicek, 2016). Platform-based businesses such as Google, Microsoft, Facebook, Apple and so on have attained unprecedented power to monitor, predict, and influence organizational, social, economic, political and human behaviours through the mass-scale extraction and use of digital data (Yeung, 2018). As Srnicek (2016, p.88) argues, through the appropriation of the 'raw material' of data, 'the platform has become an increasingly dominant way of organizing businesses so as to monopolize these data, then extract, analyse, use and sell them', enabling platform companies to become virtually monopolistic 'owners of the infrastructures of society' (p.92). For Fourcade and Healy (2017, p.10) the data industry has deepened the reach of the

market and defined new strategies of profit-making by turning 'digital records' into new sources of capital:

> As new techniques allow for the matching and merging of data from different sources, the results crystallize … into what looks like a supercharged form of capital. … [The] digital economy's classificatory architecture allows market institutions to apprehend their clients, customers, or employees through new instruments of knowledge, efficiency and value extraction. Markets have learned to 'see' in a new way, and are teaching us to see ourselves in that way, too.

Platforms that 'see like a market' by classifying, scoring and ranking individuals from their digital records have become the dominant means to the market ambitions and commercial advantage of technology companies.

Understood as a socio-economic logic that imbues digital technologies, commands them to action, and changes the social worlds in which it intervenes, platform capitalism has begun to infuse the higher education landscape by merging with political demands for universities to become more data-driven, competitive, and market-focused. Technology businesses have recognized the market opportunities of HE, stimulated by multibillion dollar market valuations of the sector (HolonIQ, 2018). A global industry of educational technologies has grown to encompass every aspect or 'market segment' of HE activity (Wiley, 2018), including recruitment, enrolment and admissions services; student management systems; core digital infrastructure; management dashboards and analytics platforms; learning management systems and virtual learning environments; digital library and information services; elearning software and courseware; learning analytics; online assessment; plagiarism detection; graduate talent analytics, alumni and graduate relationship management; and more. In Anglophone contexts especially, HE policies emphasize the necessity of collecting, analysing and using data to monitor and improve university performance (Williamson, 2019). Consequently, providers of 'essential data solutions services' have become competitive market actors (Robertson, 2019). Although the university has always adapted to the political economy and the wider technology environment, HE is now being exposed to new market forces and reassembled through digital technologies (Bacevic, 2019).

In this context, the global education business Pearson has sought to establish itself as a global leader in 'data-driven', 'digital-first' education, with its own data analytics capacities, product development, evaluative devices, and market valuations (Williamson, 2016; Riep, 2019). Pearson has expanded as a global 'edu-business' seeking new market niches for its products (Junemann & Ball, 2015) to become a globally integrated education services company centred on development and provision of digital learning platforms (Sellar & Hogan, 2019). Since 2012, its 'digital transformation strategy' has moved the company's priorities away from its traditional textbook and standardized assessment market, based on a business-to-

business strategy of the company selling to institutions, to 'digital first' delivery and a direct-to-consumer market strategy (Pearson, 2018a). Its chief technology officer even terms it a 'platform business' (High, 2018). Its stated 2018 strategic priorities were to 'grow market share through digital transformation', which includes its higher education digital courseware platform, and 'invest in structural growth markets', including its Online Program Management (OPM) platform for HE institutions to deliver online degrees (Pearson, 2018a, p. 5), thereby enabling Pearson to both 'shape the future of learning' (p.18) and 'lead and shape the market' (p.20).

To realize these ambitions, in 2019 Pearson announced the launch of the Global Learning Platform for delivery of 'on-demand' educational content, allowing students to 'rent' digital resources on a subscription basis, rather than purchase textbooks, through a business model emulating online 'streaming' services like Netflix and Spotify (Pearson, 2019). Likewise, Pearson's OPM platform for digital and distance courses has become one of its main 'growth market' products. These developments are part of a digital portfolio of approximately 50 major products and services, alongside in-house research and evidence, that Pearson has sought to use 'to resolve contradictions linked to education commercialisation by demonstrating the "measurable impact" and "outcomes" resulting from its educational products and services and communicating that to customers, shareholders, policymakers, state managers and partners' (Riep, 2019, p. 407). Its platforms also incorporate its market strategies in software, code and algorithms.

Across the HE industry, companies like Pearson are repositioning themselves to adopt the model of the platform, bringing about a new market form of the 'platform edu-business' which 'sees' HE as a market, seeks capital from the digital records of universities, and aims to open up new market opportunities for platform products by changing how the sector operates. Pearson's platform products are key market devices for the company, which it is mobilizing to create new markets in HE. Pearson's ambition to shape the future of learning and shape markets simultaneously through digital platform technologies is the core focus of the following examination of the micro-processes of market-making in higher education.

Market-making

The making of markets is a core focus of the sociology of markets, particularly in the 'performative school of thought' which views 'economic action as a result of calculative processes involving the specific technologies and artifacts that actors employ' (Fligstein & Dauter, 2007, p. 3). From the performative view of marketization, Çalışkan and Callon (2010) argue that making markets depends on a heterogeneous arrangement of rules and conventions, technical devices, metric

systems, calculating equipment, logistical infrastructures, texts, technical and scientific knowledge, and human competencies and skills. Their programme for empirical investigation of the performativity of marketization highlights the things in the market, agencies, encounters, prices and market maintenance, and they define 'the study of marketization as the entirety of efforts aimed at describing, analysing and making intelligible the shape, constitution and dynamics of a market sociotechnical arrangement' (Çalışkan & Callon 2010, p. 3). In the performative sense, market-making involves 'incorporation into algorithms, procedures, routines, and material devices' (Mackenzie, p. 19), where market devices all play a part in shaping the construction of markets. The central insight of the sociology of markets—that markets have to be made, including the construction of practical devices and technologies, and that they then exert real effects, that is, they are performative—has catalysed significant efforts to unpack market-making processes in fine-grained empirical detail (Muniesa et al, 2007).

Çalışkan and Callon (2010) identify five micro-processes and sociotechnical dynamics of market-making for empirical examination. The first micro-process of 'pacifying goods' refers to how things and services are represented as describable and predictable 'packages' with fixed qualities to which value and price can be attached. Second, 'marketizing agencies' refer to the actors competing to define what is a valuable good or service, which takes place among people, technologies, laws, and forms of calculation. Marketizing agencies include human actors such as market analysts, but also computer software, business strategies, and private company support. Third, 'market encounters' refer to how agencies and goods meet one another, trade shows, conferences, seminars and other events, as well as through social media, web pages and other online and material arrangements. Fourth, 'price-setting' for a good or service is established through struggles between the different agencies that encounter each other, such as determining how much to sell or buy a service or product. And finally, the micro-processes of market-making, design, implementation, management, and maintenance describe how various elements are brought into being and reproduced to enable ongoing stability, continued extraction of profits, and efficient value-for-money use of resources.

From the perspective of market sociology, platform capitalism itself needs to be understood as the product of myriad interacting market devices, techniques and strategies, principal along them the technological form of the platform itself. As sociotechnical market devices that 'do things', 'act' or 'make others act' (Musinesa et al. 2007, p.2), digital platforms create new kinds of market behaviours, relations and transactions, changing how people and organizations see and act (Fourcade & Healy, 2017). Technologies, such as digital platforms, are the material infrastructure of calculation necessary to market-making in platform capitalism.

Following this performative, sociotechnical orientation to the study of market devices and arrangements in the HE context, Komljenovic and Robertson (2016) argue that HE markets do not simply appear as the outcome of market ideology or policy interference, but are instead continually made and remade, as new products and services are imagined, invented, implemented, or vetoed. As 'markets are made in, for and through higher education', these 'market-making processes are recalibrating and remaking structures, social relations and subjectivities, within and beyond the university, in turn reconstituting the university and the higher education sector' (Komljenovic & Robertson, 2016, p. 623). The formerly non-market space of higher education has been reframed as an 'education services market' by a 'global HE industry', which has introduced 'HE market devices' such as digital platforms, infrastructures, data and metrics into HE as ways of making new markets (Komljenovic & Robertson, 2017). Market-making in HE involve considerable 'investment' by policymakers, politicians, investment advisors, education firms, and universities, but also involves the mundane practicalities of creating higher education products and services that can be exchanged in a range of marketplaces. As such, understanding HE marketization requires not just macro analysis of political ideology, but micro analysis of the practical, material, technical and discursive effort of market-making and maintenance.

These empirical vantage points on the construction and performativity of markets provide a framework for examining the emerging role of platform edu-businesses in the practices and processes of HE marketization. Focusing empirically on five key ways in which Pearson enacts digital platforms as market devices, the following sections reveal how Pearson is involved in the sociotechnical dynamics of HE market-making and, more widely, how digital market devices fuse HE to the market dynamics of platform capitalism.

Numerical valuation
The first dynamic of marketization in which Pearson is a major actor is the construction of numbers as a way of attaching valuations to platform products. Numbers act as 'cognitive frames' that market actors use to justify their strategies, investments and products (Verger et al, 2017). Pearson's core business model in HE depends on producing goods and services in which it hopes universities will invest in order to secure it market share. Numbers support such marketization processes, since 'services are framed with a view to objectifying and transforming them into packages, "things" which can be valued' by being made 'describable and predictable', and which thus require 'the implementation of specific socio-technical arrangements' (Çalışkan & Callon, 2010, p.7). Numerical devices enable Pearson to stabilize and pacify its new digital platform services as packages with fixed qualities to which value (monetary and educational) can be attached.

Pearson's business fortunes have fluctuated considerably in recent years, with £2billion wiped from its stock market value in 2017 after issuing a 2-year profit warning (Sweney, 2017). Its subsequent annual reports have provided highly detailed enumerative accounts of its market recovery strategy, including financial summaries and future profit projections based on its 'digital transformation' (Pearson, 2018a, p.45), which includes pivoting to 'digital first' services, scaling back its print textbook business, and selling its K-12 product portfolio (Wan 2019a). From 2013, Pearson began investing in digital platforms and data services, and concentrated on growing its core business in HE online program management infrastructure, digital courseware, alternative models of HE provision, and the use data analytics in the universities sector, with the expectation of becoming profitable in these areas by 2020-21 (Wan, 2018). Its annual reports detailing its company value, financial performances, forecast future profit and strategic priorities are, then, powerful market devices which 'stabilize' the company through the careful packaging and framing of numbers and valuations, thereby making its future financial performance 'predictable' for its shareholders, stock market observers, and business media commentators.

The generation of numbers also enables Pearson to present its customer markets in terms of specific valuations. Pearson commissions and conducts quantitative market research in order to detect and adapt to changing market trends in higher education. Market research surveys are a powerful form of market device for forecasting economic behaviour during the construction of markets (Muniesa et al, 2007). In 2018, Pearson commissioned a global market research firm to conduct a 'Global Learner Survey'—with a sample of 11,000 in 19 countries—so as to better understand 'the next generation of learners' (Pearson, 2018b). These statistical market research data have enabled Pearson to frame its potential market consumers as 'Gen Z', with describable educational values and expectations that Pearson has fixed into place as statistically significant evidence through graphs, numbers and infographics. The findings translate students' educational values into numerical values, while providing quantified intelligence for the company in setting strategies for market growth. The final findings, reported in 2019, were packaged up as a glossy website rich with data visualizations, and marketed on social media to circulate as an authoritative source of quantitative evidence on student expectations of HE, careers in the 'talent economy', and lifelong digitally-enhanced learning (https://www.pearson.com/news-and-research/the-future-of-education/global-learner-survey.html).

As a market device, the Gen Z numbers are 'presented as "scientific" facts that intervene in the construction of markets' (Riep, 2017, p.354). Likewise, in its 2018 annual report, its strategic priorities for product development were based on quantitative 'market trends' that Pearson identified as 'the rise of choice' among

'Gen Z' consumers, greater 'technology-enhancement' of teaching, more 'flexible' pathways through higher education, and more demands for 'career-driven learning' (Pearson, 2018a, p. 16). Reflecting recent policy preoccupations with the 'student-consumer' as an 'active service-user' of HE (Tomlinson, 2017, p. 457), Pearson's market strategies bring together statistical survey findings and corporate objectives to frame a stabilized consumer on which financial profit projections and performance forecasts may be made.

The enumerative framing of its customers also then permits Pearson to make new operational investments—ultimately incorporating its company beliefs about its customer market in software products. To bring the Gen Z consumer market into being Pearson has sought to package up its new 'digital-first' services and platform as saleable market products. With the Global Learner Survey indicating growth in students' use of online video and subscription services for learning, the company has developed a social media streaming model for direct-to-consumer delivery of educational content. Its Global Learning Platform has been presented by company executives as appealing to the 'the Spotify generation' of 'Gen Z' students who will themselves 'pay for use. They don't want to buy to own, and they only want to pay to use things that are directly relevant to their course and their outcomes' (Wan, 2018). The Global Learning Platform is 'an engine that will enable Pearson and its partners to launch personalized learning experiences more quickly and with better outcomes', allowing the company to also update educational content in 'real-time' (Pearson, 2019). As a market device incorporating the company's market ambitions in software and algorithms, the Global Learning Platform also enables Pearson to operate 'on an economy of scale, indispensable for businesses that only enter a sector if profit may be made' (Verger et al, 2017, p. 328).

Pearson has turned directly to Silicon Valley's key platform businesses for inspiration for the platform. Its chief technology officer claims:

> 'Silicon Valley companies create the benchmark for the digital experience by being platform businesses. Our vision is to leverage the opportunity to transform along similar lines in terms of having a single platform globally that … would allow us to move into a more personalized experience that delivers high-quality education outcomes. It would be game-changing for not only Pearson, but for the entire industry if we could create that single platform, similar to Netflix, Spotify, and Amazon'. (High, 2018)

The market logic of platform capitalism characteristic of Silicon Valley companies combines with Pearson's market growth strategy in its Global Learning Platform. The platform is a stabilized market device arranged from many heterogeneous sociotechnical elements: statistical market survey data, market trends intelligence, profit projections, social media business models, seductive discourses, and digital technologies. The lines of numbers in its annual reports and market surveys find their realization through incorporation in the lines of software code and algorithms

that enact its Global Learning Platform as an 'engine' of 'personalized learning experiences' and 'better outcomes'. In this sense, the construction of numerical values does considerable work for Pearson in the process of making new markets—framed as 'Gen Z' market-consumer subjectivities—and in the production of platform products that might be exchanged in those markets.

Market valuation

Making new markets in education is a highly complex accomplishment demanding significant expertise, networks and relations (Verger et al, 2017). Market-making actors, or 'marketizing agencies', include both human and nonhuman entities that 'take part in the action and in the cognitive process', and need to be understood as heterogeneous 'socio-technical arrangements' that collectively participate in market-making (Çalışkan and Callon, 2010, p.9). The study of the sociotechnical arrangement of market-making agencies requires attention to the 'diversity of competencies, knowledge, know-how, material resources and forms of organization of the agencies involved in a market', and especially of their 'calculating capacities' in 'processes of valuation, that is to say of participating in calculation of the relative values of goods' (p.11).

Pearson has established itself as a powerful marketizing agency in HE. It has assembled an array of cognitive and technical expertise, knowledge, and calculating equipment to enact its digital transformation. Part of its know-how is political. Sir Michael Barber, a former McKinsey's consultant and Prime Ministerial adviser in the UK, was the Chief Education Adviser for Pearson from 2012, overseeing its digital transformation, before taking up the post of Chair of the Office for Students (OfS), the new 'arms length' HE regulator for the UK, in 2017. Barber's movement across private and public offices demonstrates how Pearson has sought to secure political advantage as a market-making agency.

Pearson also brings novel kinds of practical methodological know-how and technical expertise into HE—both human experts who know how to engage with complex digital technologies and data, and nonhuman information technologies and calculative equipment required for the production and analysis of complex large datasets (Williamson, 2016). For example, in 2017 it produced a collaborative research project with the innovation charity Nesta and the Oxford Martin School on 'the future of skills' required by students for employment in 2030, which it presented both as an interactive website and a detailed report complete with extensive data visualizations (https://futureskills.pearson.com/). The research 'introduces a novel mixed-methods approach to prediction that combines expert human judgement with machine learning, allowing us to understand more complex dependencies' and to 'exploit this enhanced capability' for future forecasting (Bakshi et al, 2017, p. 9). As a market-making agency Pearson has brought together

considerable expert know-how—both human judgment and nonhuman machine learning—into the production of educational predictions. This sociotechnical production of predictions, as a market imaginary to be pursued for financial investments and profitable return, has produced intelligence which Pearson is able to use for its own organizational purposes as it produces and positions new digital platforms to serve the needs of its (predicted) market.

Pearson's capacity to make markets is also achieved through direct investment expertise. In 2019 it launched its own $50m venture capital investment fund, Pearson Ventures, to 'invest in companies building new market opportunities using innovative business models, future technologies, and new educational experiences', claiming that while it would 'pursue competitive financial returns, equally important is its ability to collect shareable insights and drive organizational learning to help future-proof the company' (https://www.pearson.com/corporate/about-pearson/innovation/pearson-venture-fund.html). In this sense, Pearson is not only investing in new market opportunities, but making new markets for products for purposes of extending its own cognitive capacities for organizational learning and future-proofing. In these ways, Pearson has assembled the necessary entrepreneurial, cognitive, practical and methodological expertise to define and enumerate the value of HE and digital products, and is also actively intervening in emerging markets by funding startups for its own long-term organizational learning and market advantage.

Customer value
The third key market-making dynamic for Pearson is developing new consumer products that deliver value for customers. Çalışkan and Callon (2010, p.14) highlight how the encounter between producers and consumers in a market is always mediated by 'encountering devices' which frame and format how the different agents 'meet each other'. The sociotechnical arrangements orchestrating these encounters often consist of 'machines, software, material devices and human beings whose activities [are] entangled and interconnected' (p.15). Platforms are ideally suited to making market encounters possible, because they act as 'intermediary' devices 'that bring together different users', such as customers, service providers, producers, and suppliers, in dedicated marketplaces (Srnicek, 2017, p.43).

Pearson seeks to frame and mediate the encounter between itself and its customers in multiple ways. By participating in trade events around the world, it stages market encounters with potential customers, while its website advertises various webinars where the benefits and value to institutions of its various products are presented. These devices and spaces of marketization enable Pearson to build market relations with the sector. Its dedicated platform products, the Global Learning Platform and

OPM, are paradigmatic intermediary devices for enabling market encounters, by restructuring the market relations between HE providers and HE users, with Pearson mediating those connections and benefitting financially from the interactions and transactions that take place.

A key aspect of such market encounters is 'price-setting', or the fixing of a price through 'various tools, procedures, machines, instruments or, more generally, devices' that enable products and services to be translated into 'monetary amounts' (Çalışkan and Callon, 2010, p. 17). Pearson is in a price-setting struggle with other online program management (OPM) market competitors, leading to novel forms of pricing where OPM providers invest in institutions, providing financial support for the costs of building online learning programs, and both the institution and the company gain from enrolment fees if the programs are successful, with the company taking around 50-60% as its return on investment (McKenzie, 2018). With universities in the US and UK especially moving toward increased distance learning provision, Pearson has targeted institutions in these countries as a key part of its market growth strategy, developing new price-setting instruments to lubricate its encounters with customers.

As already seen, Pearson has also moved to a direct-to-consumer business model. This is based in part on its market intelligence about Gen Z student-consumers, but also on calculations about purchasing/renting costs for those consumers and running costs for the company. A major catalyst of its digital transformation was the company's declining sales of textbooks as students opted to 'rent' books more cheaply from Amazon instead (Waterson, 2019). Pearson has established what it views as value-for-money prices that it can bring to the direct market encounter with students, with carefully calculated 'price points' designed to disincentivize textual rental and incentivize digital streaming of educational content and resources (McKenzie, 2019).

Pearson is making two significant price-setting moves in its market encounters with customers. First, it is adapting to the market logics of online streaming services, and treating students as a direct-to-consumer market. Second, as an OPM vendor, it is investing in institutional efforts to create successful distance learning programs, and generating profitable returns when fee-paying students are attracted to those offerings. As such, Pearson is involved in multiple forms of market encounter with its diverse customers. It is meeting students directly through its online Global Learning Platform as a value-for-money content provider; building long-term partnerships with institutions, lubricated by its investments and its delivery of OPM services; and it is mediating the market encounter between students and universities, by offering the digital platform products where students pay fees for an educational service and Pearson claims financial returns from those

transactions. Edu-business platforms have become key mediators of market encounters between providers and users of HE, giving companies such as Pearson potential commercial advantage in the competition for market share over the sector. This also gives it performative advantage to change the very nature of the relationship between universities and students, by translating pedagogy into increasingly transactional exchanges mediated by for-profit platform services.

Labour market valuation

A significant part of Pearson's market-making activity is its valuation of skills and educational outcomes to labour markets. Labour markets are themselves products of a process of pacifying human beings and making them amenable to calculation and prediction (Çalışkan and Callon, 2010, p.6). From this perspective, a task of higher education is to render students calculable so that their fit to labour markets can be predicted and acted upon. The task of calculating how to align HE to labour markets has become a core strategy of Pearson, as it has 'committed to both designing products for, and evaluating impact on, a wider range of outcomes including skills to support learners' career readiness and employability prospects' (Pearson, 2018a, p.30), and assembled a 'career readiness and employability' strand of services, leadership, research, white papers and products dedicated to redefining the relationship between education and the workplace (https://www.pearson.com/us/higher-education/why-choose-pearson/thought-leadership/career-readiness-employability.html). In so doing it is 'helping meet the needs of industry and government in tackling the skills gap—a growing global productivity challenge' (Pearson, 2018a, p.30). In short, by ascribing future value to jobs—for students, industry and government alike—it is intervening in making labour markets.

Another key way Pearson is making future labour markets is through horizon-scanning, foresight and predictive algorithms. Its Future of Skills collaboration produced extensive predictions about future labour markets using machine learning, trend analysis, foresight methods, and 'employment microdata' to rank the future demand for occupations. The project involved training 'a machine-learning classifier to generate predictions for all occupations, making use of a detailed data set of 120 skills, abilities and knowledge features'; occupations were then 'selected by the algorithm itself' in order to determine 'which skills, abilities and knowledge features were most associated … with rising or declining occupations' (Bakhshi et al, 2017, p.29). Its 'results provide broad support for policy and practitioner interest in so-called 21st century skills in both the US and the UK', which it identifies as 'interpersonal skills, higher-order cognitive skills and systems skills' as well as 'broad-based knowledge' (p. 14). This study, then, produced predictive algorithms to make data-inferred forecasts about occupational demand and analyses of the skills and knowledge most associated with highly-

ranked or 'rising' occupations. In this way, it constructed an algorithmic prediction of labour markets, which Pearson has subsequently sought to make 'actionable' by producing products for 'career-driven learning' and employability (Pearson, 2018a).

Another way Pearson is making labour markets is discursively. Through a collaboration with JFF (Jobs for the Future), a US think tank that 'accelerates the alignment and transformation of the American workforce and education systems to ensure access to economic advancement for all' (https://www.jff.org), Pearson released *Demand Driven Education: Merging work and learning to develop the human skills that matter* in 2018. Reiterating the Future of Skills findings, the report promotes specific transformations to the HE system required to promote new skills outcomes and workforce development in the US and UK. If earlier HE reforms had focused on widening access and improving academic success, 'demand driven education' would 'focus more strongly than ever on ensuring graduates are job-ready and have access to rewarding careers over the course of their lifetime' (Deegan & Martin, 2018, p.7). Its conclusions are that HE needs to 'develop and measure skills' that are 'most in demand' through 'dynamic and work-based pedagogy'; 'ensure continuous alignment' with labour markets; create flexible opportunities for students 'to rapidly convert learning to earning'; and enable industry to collaborate in HE provision (Deegan & Martin, 2018, p.8). These demands are central to Pearson's efforts to make new labour markets. *Demand Driven Education* even highlights the potential of using AI-based 'predictive talent analytics' to match students to career paths, which would entail automated, algorithmic making of labour markets.

Through these modes of labour market-making, Pearson has sought to establish much closer alignment of HE to industry. Throughout, certain economic assumptions about structural changes to the economy, most notably from automation itself, act as reference points for these recommendations. As a strategic priority, 'Pearson is connecting the dots between students and employers, ensuring learners have the skills they need to excel in their career and employers have the people they need for a rapidly changing workplace' (Pearson, 2018a, p. 57). In the performative sense of market sociology, Pearson is integrally involved in making labour markets by anticipating workforce demand and projecting how future education will build 'pipelines' between learning and earning, and then by promoting new products, as market devices, to ensure those pipelines are joined-up.

Performance evaluation
The final way Pearson makes and maintains markets is by providing platform services that enable university customers to enhance their performance evaluation metrics and thus demonstrate comparative advantage and value over competitors

in HE markets. As HE has become more marketized, the numerical evaluation of 'performance' has become a key way of rating and ranking institutions, courses, staff and faculties, and then of intervening to make them perform better in a competitive marketplace—in short, of making them more valuable (Espeland & Sauder, 2016).

Pearson's marketing materials emphasize its commitment to increasing HE performance. Through its 'full-service approach to creating online degree programs or individual learning solutions', Pearson's online learning services are presented as streamlined technical systems and standardized program management packages for universities in order to 'help you expand access, reach each student, and improve achievement'. Specifically, Pearson claims that programs launched on its OPM platform have 'proven to be in demand by the labour market and prospective learner', plus that they help institutions 'improve your rankings by elevating your brain regionally and nationally', and strengthen 'market awareness' to boost universities' reputational advantage (https://www.pearson.com/us/higher-education/products-services-institutions/online-program-management.html). Pearson has even produced a downloadable white paper on OPM and a guide to 'building a competitive online program' that will 'consistently determine online program success or failure in today's marketplace' (https://www.pearson.com/us/1/online-program-management-ebook-form.html). Many universities in the US and UK have signed long-term 10-year deals with the company's online program management platform. Its 2018 annual report indicates 57 existing institutional customers with a 'pipeline' of future partnerships and contractual agreements. These long-term agreements ultimately 'lock-in' universities to for-profit platforms by creating new dependencies of public institutions on private transnational capital.

Pearson's online learning platforms will also be able to provide the kind of fine-grained student data that conventional universities cannot collect without the platforms, in ways which reflect the dominant policy emphasis on performance metrics in both of its core markets in the US and UK (Williamson, 2018). As in those policy spaces and markets, the key criteria of performance for Pearson is based on employability metrics, career-readiness and workplace alignment, in particular with reference to the future skills demands of the 'talent economy'. US and UK policies prioritize 'graduate tracer studies' and 'graduate outcomes' assessed in terms of earnings as key metrics of university performance. Pearson is now focused on making HE performance calculable according to the long-term labour market performance of graduates. Through its work on future skills and changing occupational demand, Pearson is shifting perceptions of what constitutes 'valuable' learning, redefining the value of HE in terms of employability, and seeking to reshape HE to deliver better value to students and to labour markets.

In these ways, Pearson is providing digital services, data analytics capacity and discursive guidance to universities on improving their measurable performance. Its digital platforms make HE more measurable, comparable and amenable to intervention strategies, all premised on the incentive of accelerated success measures and improved performance rankings in the competitive HE market. Through its digital transformation, Pearson has therefore become a key agent of HE performance evaluation by providing (and 'locking-in' institutions to) the platforms required for measurement, thereby redefining what constitutes a valuable course in terms of its measurable performance on student employability and labour market readiness metrics.

Conclusion

Pearson is a major multinational, multibillion dollar market-making organization in education, deploying digital products and platforms in ways that are restructuring higher education to emulate and enact market processes. It illustrates how digital platforms have become novel 'market devices', supported by market strategies in the global HE industry, which are increasingly aligning HE with the digital economy (Robertson, 2019). Although HE has long been affected by processes of evaluation and ranking (Espeland & Sauder, 2016), digital platforms bring HE into practices of valuation and value extraction derived from 'platform capitalism', where platforms have become economic engines based on the extraction, analysis and use of large-scale data (Srnicek, 2017). As Sellar (2017, p. 349) notes, commercial technology actors are increasingly 'making markets for data-driven products and services' in education and simultaneously generating 'synthetic data generated within and by public institutions as a resource for product development'.

Understood as performative market devices that have to be made through significant effort to do things, compel actions, change organizational behaviours and elicit practical effects (Muniesa et al, 2007), digital platforms and data extraction have become central to how new markets are made in higher education, and to the reshaping of HE as a market-like sector. The wider global education industry is integrally involved in the marketization of higher education, especially as companies such as Pearson pivot to become platform edu-businesses modelling themselves on the dominant logics of contemporary platform capitalism. As in the digital economy where data are key sources of value and capital generation, the global higher education industry is 'seeing like a market' (Fourcade & Healy, 2017) through the painstaking micro-processes of making myriad markets, producing valuations based on data, and then extracting value from the data and capitalizing on the opportunities that result. HE marketization is actively being accomplished through a complex sociotechnical arrangement of market devices including platforms, as well as the numbers and charts, human and nonhuman agents, machine learning algorithms, visualizations and infographics, market valuations,

reports and discourses that all support the construction, maintenance and diffusion of those platforms.

What wider critical implications for HE itself emerge from the market devices and strategies of global education industry actors such as Pearson? One is the question of governance. Platforms are becoming central to how universities are organized, managed, and measured. Online learning platforms such as those market devices of Pearson allow data about teaching and learning processes to be extracted and analysed in near real-time, and used to reinforce policy and regulatory priorities around performance audits, risk analysis, and comparison, whereby the HE sector itself is treated as a competitive market of institutions seeking advantage in national and international contests (Williamson, 2019). Second, platforms enable 'automated data representation in education' whereby computational models of learning, '"owned" by a small elite of data experts driven by technical mindsets and commercial incentives, superimpose multiple layers of algorithmic complexity on stripped down (and highly contentious) understandings of human learning' (Perrotta and Selwyn, 2019, p. 4). The market-making involved in expanding digital platforms and platform edu-businesses in education, in other words, ultimately stands to shape how processes of learning are apprehended and acted upon.

Following from this, third, platforms stand to displace the practice of teaching to 'robot pedagogies', redeploying some aspects of curriculum organization, teaching and assessment to increasingly capable machines that can analyse student data in real time, make automated recommendations and adapt to 'personalize' the pedagogic experience (Zeide, 2019). The introduction of platforms into education generates automated rhythms of activity to which educators have to respond and adapt. Platforms also transform pedagogic relationships into market exchanges and transactions, mediated through for-profit edu-business platforms that take a 'cut' of the fee while also benefitting from the extraction of transactional data between students and educators on the platform. Fourth, as they are aligned with demands of employability and career-readiness as key HE metrics, platforms are positioned to accelerate the pipeline from 'learning to earning', or 'major to wages', thereby conflating the evaluation of university performance with the valuation of universities' contribution to labour markets (Busch, 2017).

Fifth, and finally, digital platforms create new dependencies for public universities on the private for-profit infrastructures that constitute platform capitalism. Srnicek (2017) claims platforms have become key infrastructures of society by undergirding social relations, economic transactions, cultural experiences, and political discourses. As an infrastructural underlay to HE, digital platforms 'lock-in' universities to the dynamics of platform capitalism by fusing an ever-increasing array of HE functions and tasks to proprietary software systems, code, and

algorithms. In these ways, HE is being incorporated into the market devices of digital platforms, and into the socio-economic business model of platform capitalism.

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