THE LAW-TECHNOLOGY CYCLE AND THE FUTURE OF WORK

Simon Deakin and
Christopher Markou

WP 504
March 2018

THE LAW-TECHNOLOGY CYCLE AND THE FUTURE OF WORK

Centre for Business Research, University of Cambridge
Working Paper No. 504

Simon Deakin
Centre for Business Research
University of Cambridge
(s.deakin@cbr.cam.ac.uk

Christopher Markou
Centre for Business Research
University of Cambridge
cpm49@cam.ac.uk

March 2018

Abstract

Features of the 'fourth industrial revolution', such as platforms, AI and machine learning, pose challenges for the application of regulatory rules, in the area of labour law as elsewhere. However, today's digital technologies have their origins in earlier phases of industrialisation, and do not, in themselves, mark a step change in the evolution of capitalism, which was, and is, characterised by successive waves of creative destruction. The law does not simply respond to technological change; it also facilitates and mediates it. Digitalisation, by permitting the appropriation of collective knowledge, has the capacity to undermine existing forms of regulation, while creating the space for new ones. It may erode the position of some professions while enabling others, complementary to new technologies, to emerge. It is unlikely to bring about the redundancy of forms of labour law regulation centred on the employment relationship. We appear to reaching a point in the law-technology cycle where push-back against regulatory arbitrage can be expected.

Keywords: gig economy, digitalisation, future of work, labour law, law and technology, Uber.

JEL Codes: J41, J48, K31, L22, O33.

Acknowledgements

A draft of this paper was presented at the Conference on *Impresa, lavoro e non lavoro nell'economia digitale*, University of Brescia, 12-13 October 2017. We are grateful for comments received from the conference participants, in particular Ewan McGaughey. A version of the paper is forthcoming in *Giornale di Diritto del Lavoro e di Relazioni Industriali*.

1. Introduction

Labour lawyers are having to confront the challenges posed by a new wave of technological change. Their response will depend in part on how the law-technology relationship is understood. It can be seen as a unilinear relationship, with law responding to technological change, usually belatedly. It can, alternatively, been understood as a relationship of cyclical interaction. According to this point of view, technology does not emerge from, or operate in, a societal vacuum. It is socially embedded and legally mediated. The legal system influences the path of technological change, although often indirectly and with a lagged effect. Although each wave of technological advance is distinct from its predecessors, we can learn from previous historical phases of the law-technology cycle.

The second approach is the one taken in this paper. We begin by outlining a theory of the law-technology cycle which stresses the elements of mutual causation and co-evolution in the relations between social systems (section 2). We then present a historical case study of the impact of technology on legal and social relations at the dawn of modern European labour law in the early decades of the nineteenth century (section 3). We then update our analysis by looking at recent attempts by technology companies to pursue a strategy of 'normalisation', under which they lobby for and sometimes achieve exemption from laws which impose costs on emerging business models (section 4). Section 5 concludes.

2. The coevolution of law and technology

Our suggestion is that law and technology co-evolve, in the sense implied by the theory of social systems: they are autonomous social sub-systems, operating for the most part independently of one another, on the basis of their own self-reference and self-reproduction.[1] Each sub-system forms the environment of the other and thereby influences its selection processes. Over time, alignments between the two systems may occur, but a precise fit cannot be expected, and there will be lags in their mutual adjustment.

We should therefore expect law to lag behind technology at times of rapid innovation, but also understand that law does more than simply respond belatedly to technological change. Technology's evolution is shaped by its legal environment. The legal system facilitates technological change through the support it gives to innovation, for example via the law of intellectual property. Business firms, through which technological changes are organised and delivered to the market, rest on the foundations provided by company and commercial law. The law also diffuses and absorbs the risks associated with technological change. This is a well established role, historically, for labour and social security law.[2]

The implication of this approach is that labour law and technological change mutually interact, albeit in uneven and unpredictable ways. Labour law has the potential to respond effectively to new technologies, but its capacity to evolve is bounded by limits on its ability to process new information from its environment while maintaining its own distinct modes of operation.

Viewing technology as a social system helps us avoid two alternative conceptions of technological change which are widely held but in danger of becoming unproductive for current debates. The first of these sees technology as the application of new scientific knowledge to social and economic relations. As advances in scientific understanding are made, they are translated in a more or less linear way into technological objects and processes which, because of their novelty, are necessarily beyond the scope of existing laws and regulations. Otiose and redundant laws, if not completely sidestepped, should be removed so as to avoid any unnecessary disruption of the benefits which new technologies are bringing: resistance is futile. Something like this view underlies the claim that existing modes of labour law regulation, including its focus on 'subordinate' or 'dependent' work carried out under the remit of a contract of employment, are being rendered ineffective in the face of the 'gig' economy and related aspects of technological change associated with digitalisation. The problem with this approach is that it understates the degree to which technology and law are intertwined and hence the capacity of the legal system to evolve to meet new regulatory challenges.

A second view is that technology is socially constructed and, as such, capable of being moulded by well-intentioned regulatory interventions. Numerous contemporary discussions of new technologies from the viewpoint of philosophy and the social sciences proceed by identifying design faults which, because they are ultimately the product of human agency, can, it is assumed, be rectified by targeted regulation. This approach assumes the existence of a conscious, and perhaps conscientious, designer with the power to determine how far a given technology can be rendered functional or otherwise through legal controls. This point of view is essentially optimistic concerning the capacity of regulators to deploy labour law, in common with other modes of social and economic regulation, to deal with issues posed by technological change as they arise. However, it overstates the extent to which instrumental legal regulation can operate as a mechanism for the implementation of public policy when the legal system's external environment is in a state of flux, as is currently the case.
If we think of technology as a social system, we can understand it as a complex and emergent process with its own internal operational logic, which, at the same time, is structurally coupled to other social systems in its material and social environment. In common with these other social systems, technology is

functional mostly with regard to ensuring its own self-reproduction. It is not designed, and has not evolved, to be functional with regard to other systems. It can however be linked to them through various modes of structural coupling.

For example, the cryptocurrency 'Bitcoin' may be useful (or functional) for users who want to achieve anonymity for their transactions.[3] This may make it highly dysfunctional for the legal system since the resulting transactions cannot be easily traced, thus making it difficult to enforce relevant civil and criminal laws.[4] From a systemic viewpoint, cryptocurrencies undermine the capacity of the legal system to process information about the external environment using its 'internal code' of legal/illegal.

In the same way, Bitcoin may have various effects on the economic system. It provides a new mode of payment which may be compatible with the operational logic (payment/non-payment) of aspects of commerce, but which also undermines the operation of fiscal systems to the extent that Bitcoin transactions cannot be taxed by state authorities.[5] This may prevent the payment of taxes to support public goods needed for markets to operate.

Bitcoin presents these problems for law and the economy because it does not depend on either the legal or economic system to process its own communications. It has achieved a degree of autonomy or closure from other social sub-systems which is characteristic of many contemporary technologies, which often appear to evolve in ways which are indifferent to the legal and economic externalities they create. This is a feature of technology's autopoiesis: it develops in ways which respond largely to its internal modes of operation, rather than those of law or the economy. The technological system is not inherently hostile to the problems or needs of other systems, but it is essentially indifferent to them: technology evolves according to its internal imperative of stimulating new modes of research, invention and application, and not in order to promote general economic welfare or societal well being.

Thus it may be misleading to think of contentious technologies suffering from 'design defects' which can be fixed by remedial interventions: technologies like Bitcoin are not designed to be functional for law or for the economy. However, this does not mean that a technology such as Bitcoin is beyond legal control, or that its future development will be unaffected by economic costs and benefits.

The negative externalities caused by Bitcoin include increased levels of money laundering, online drugs dealing and extortion through the use of ransomware, not to mention environmental damage caused by the resources devoted to Bitcoin mining.[6] Because the cryptography underlying Bitcoin is regarded as sound by technologists, it has been assumed that regulators can do little about the problems

which it is causing. However, Bitcoin transactions can be traced using the distributed ledger or 'blockchain' which is used to validate all Bitcoin exchanges going back to the earliest uses of the technology. Thus if a unit of Bitcoin is associated with the proceeds of crime, or if a Bitcoin unit itself is stolen, the resulting 'taint' can be identified. In practice, Bitcoin units tend to be split up and then recombined in the course of hundreds of thousands of transactions, making it difficult to be sure that the taint is accurately attributed to a given unit. However this problem can be alleviated by computer algorithms[7] which make use of the legal rule according to which a withdrawal from an account is deemed to be made against the earliest made deposits ('first in, first out').[8]

The main obstacle to the creation of a public 'taintchain' is not its technical or legal infeasibility, but incentives on the part of Bitcoin users and exchanges to conceal its association with criminal activity: when criminal uses of Bitcoin, such as its association with drug dealing on the 'dark web', are revealed as a result of police action or regulatory interventions, the value of Bitcoin quickly falls. Private incentives and collective outcomes are misaligned; but this is an economic, not a technical problem. Over time, regulators have responded by tightening controls over Bitcoin exchanges, by, among other things, requiring them to register and disclose their activities to state authorities. If Bitcoin is to become more widely used as a medium of exchange, it is likely that the creation and maintenance of public taintchains will become a function of regulatory authorities such as central banks, and that a failure to conduct due diligence with respect to the source of a given unit of cryptocurrency will raise a presumption of fraud or other criminal application. Users will have an incentive to press for the recognition of Bitcoin as money in the legal sense of the term as this will mitigate the risk of loss of title where a taint has been identified from an earlier trade. This legal recognition of the status of Bitcoin would further facilitate its regulation and regulation by public authorities, so realigning private incentives with the general good.[9]

This scenario for the regulation of Bitcoin is currently evolving and its outcome is not predetermined. Technological and legal evolution do not necessary tend to efficient outcomes. Law, like technology, is 'operationally closed' in the sense of reproducing its own modes of operation in a largely self-referential way. Like technology it is 'cognitively open' and so capable of being linked to its environment (other social sub-systems) through structural coupling. However, the evolution of different social systems is asynchronous: the legal system can be expected to 'lag' behind technology during periods when the rate of scientific discovery and its commercial application speed up. Legal rules in the form of intellectual property rights and rules governing the constitution and financing of business firms provide essential background conditions for the commercialisation of scientific knowledge, but may be slower to respond to new risks of the kind

which novel technologies create, not least because of the collective action costs involved in mobilizing disadvantaged groups to respond to new externalities. Yet even allowing for 'legal lag', technological change can catalyse innovations within law as well as in the economic system.

The legal and economic systems will react to technological 'irritations' on their own terms. These irritations or catalysts are not caused solely by technological communications, but rather are the result of a particular system changing its modes of operation to accommodate technological changes. For example, how the economic system reacts to a particular technology will be determined by its own endogenous mode of operation, in other words, through incentives deriving from the operation of prices and other market signals. Thus a technological breakthrough in the use of solar panels for powering cars may be a significant event in technological terms, but still be met with an unenthusiastic response from the economic system if it does not satisfy its requirement for profitability. Similarly, a robustly safe autonomous vehicle would be considered a major technological achievement, but from the perspective of the legal system would not be recognized if self-driving cars could not satisfy various regulatory requirements, such as requiring a licensed driver to be present while the car was on the road. Legal systems are already producing new rules for autonomous vehicles including prohibitions on the use of aftermarket parts, and requirements for manufacturers to provide comprehensive cybersecurity programmes to protect autonomous vehicles from hacking.[10]

It is well known that technologies exhibit path dependencies, and it was precisely in the context of the study of technology that the economic theory of path dependence was first developed.[11] The diffusion of a particular technology is to a large extent contingent upon lock-in and antecedent conditions as opposed to satisfying criteria of allocative efficiency of the kind used in equilibrium-based modeling of the economy. The legal system too evolves in a way which is path dependent.[12] For the law to adjust in any meaningful way to technological change, it must possess concepts, processes and other modes of operation which are capable of being adjusted to meet new circumstances. But the capacity of the legal system to select in the 'right' rules is constrained by its tendency to render any conceptual innovation using forms which are already familiar.[13]

While we can see law and technology as essentially co-determined over long periods of time, this does not help us answer the question of how law can respond in the short run to unexpected technological 'shocks'. The question then becomes: how far can legal concepts such as 'property', 'capacity', 'contract' and (in the labour context) 'employment' be deployed in a way which alters the path of technological change, minimizing its more undesirable and anti-social impacts?

3. Technology, creative destruction and legal intermediation in the British industrial revolution: the transition from the guild to the modern labour market

In the debate about the impact of technology on the future of work, we are often invited to think of technology as a disruptive force which will inevitably overcome the resistance of social norms and legal rules based on the outdated assumptions of an earlier time. This is an extension to law of the idea of innovation as 'creative destruction':[14] outmoded institutions, just as much as uncompetitive business firms, will be swept aside by radical technological change. However, as we have seen, technology never operates in a legal vacuum. The legal system may be resistant to the new forms of social and economic organisation which accompany technological change. But it is also the legal system which provides opportunities for existing regulations to be evaded, and which then legitimates the new forms.

Digital technology is disruptive because it permits the private appropriation of collective knowledge. This may lead to the loss of jobs in established professions and occupations, while creating new opportunities for complementary skills; it is too soon to say that the net effects on job creation will be negative.[15] In the first industrial revolution, far reaching changes, including a fundamental transformation in the legal and economic constitution of work relations, accompanied the rise of the factory. The automation of industrial processes allowed entrepreneurs to capture forms of knowledge which had been previously been held within the guilds, the 'mystery' or skills of the trade. Much of this knowledge had been tacit and dispersed among the members of the trade. It had been complementary to the social structure of the guild, as well as to legal rules which effectively prohibited capitalist modes of economic organisation. Automation took the knowledge of the trade and embedded it in material processes which were now under the control of private entrepreneurs and those financing them. The science underlying this process was an early form of digital technology: the Jacquard loom, invented in 1804, used the equivalent of binary coding and punch cards.[16]

Across Europe, in the early decades of the nineteenth century, the laws protecting the guilds were dismantled, and replaced by the liberal-bourgeois model of private law which underpinned private property, freedom of contract and the accumulation of capital. In this period, legal change accompanied a technological revolution which swept aside the last vestiges of the medieval regulations which had previously controlled the process of production. But it was not long before the first attempts were made to put in place mechanisms for diffusing and managing labour market risks: factory laws, social insurance and, after an

interval, collective bargaining and laws inserting mandatory norms for workers' protection into employment contracts.

We can see the process at work in the evolving case law on the apprenticeship regulations which governed access to the industrial trades in late medieval and early modern England.[17] Under the Statute of Artificers of 1562, it was a criminal offence, punishable by a repeated fine, for any person to 'set up, occupy, use or exercise any craft, mystery or occupation now used or occupied within the realm of England and Wales, except he shall have been brought up therein seven years at the least an apprentice'.[18] The effect of this rule was that an employer in a regulated trade could not set up a business without serving an apprenticeship first in that trade. An otherwise qualified employer could not hire workers who had not themselves served apprenticeships, and he could not employ workers qualified in different trades. The law also imposed a limit on the number of apprentices who could be hired, with no more than three apprentices to be taken on for every journeyman. Thus the consequence of these laws was to entrench a form of producer-owned enterprise which at odds with emerging forms of capitalist production.

In *Hobbs* v. *Young* (1689)[19] a merchant employing journeyman clothmakers to make goods for export was prosecuted for breach of the 1563 Act. Counsel argued that 'he who cannot use a mystery himself, is prohibited to employ any other men in that trade; for if this should be allowed, then the care which has been taken to keep up mysteries, by erecting guilds or fraternities, would signify little'. The court agreed, but only by a majority. In essence, the court identified the merchant not as an as the employer: 'the exercise of [the trade] by journeymen and master workmen, or an overseer for hire, is not an exercise of it by them, but by him that employs them; he provided them materials and tools, and paid them wages: by law, he is esteemed the trader who is to run the loss and hazard; the whole managery was to be for his profit, and the workmen are to have no advantage but their wages'. This was not only a defence of the trade but an early example of the distinction which later courts would draw between intermediaries and employers.

The dissenting judge in *Hobbs* v. *Young*, on the other hand, commented that 'no encouragement was ever given to prosecutions upon this Statute' since 'it would be for the common good if it were repealed, since no greater punishment can be to the seller than to expose goods for sale ill wrought, for by such means he will never sell more'. So here, already, was the view that laws in defence of the guild were an unwarranted restriction on trade, which harmed consumers and hindered innovation.

This tension affected the apprenticeship rules throughout the period from their inception in the middle sixteenth century through to their repeal in the early nineteenth. In 1615 a court ruled that since the Statute of Artificers was an exception to common law rules on restraint of trade, it had to be restrictively construed. [20] Thus guild rules which went beyond the Statute in placing entry requirements upon apprentices and limiting the number of qualified journeymen began to be struck down. Also at this early point in the Act's history, the courts ruled that it did not apply to industrial trades which did not exist at the point when it was first enacted.[21] By these means, emerging trades such as cotton spinning, coach building and framework knitting were deemed to be outside the scope of the law. These were among the trades in which factory employment grew most quickly in the following decades, a point noted by Adam Smith in *The Wealth of Nations* (1776).

A series of rulings made the Act practically ineffective before Parliament repealed it in 1813. In 1756 a court ruled that a merchant could act as an employer in a regulated trade if he took as a partner someone who had served the relevant apprenticeship.[22] Then in 1792 the courts effective equated experience of running a business with formal knowledge acquired by apprenticeship, ruling that an unqualified manger of an iron foundry was not barred from acting this position. While 'he did not know how to manufacture the commodity by his own personal labour' he had, after being employed in the business for seven years, 'conducted the whole of their extensive works, received all the orders, gave directions to the workmen', with the result that 'he knew how to conduct the business as well as any master in London'.[23] Then in 1811 Lord Chief Justice Ellenborough, sitting at first instance, refused to convict the unqualified owner of a textile mill, essentially on the grounds of the inconvenience which would result: 'the valuable mills at Wakefield, Leeds, etc., the property of several persons of the first families in this kingdom… would be liable to informations, or would be required to serve regular apprenticeships as millers, if the defendant were to be considered as within the meaning of the Statute'.[24]

The erosion of apprenticeship controls can be seen in related legislation governing specific trades. The Rebuilding Act of 1667,[25] which was passed in the wake of the 'great fire' which destroyed most of the medieval centre of London, abolished the power of the bricklayers' and carpenters' companies to regulate entry to the trade and set minimum wages. The power to set wages was transferred to the Court of King's Bench and the London market was opened up to traders and artisans from outside the capital. This Act also prohibited self-organising combinations of workmen in the building trade. The Acts of Common Council, through which the London-based guilds had set limits on the numbers of apprentices and journeymen, were weakened through litigation throughout the course of the eighteenth century, and by 1750s the 'right of search' through the city corporations had enforced their regulations was effectively in abeyance.

Outside London there was a similar pattern as laws governing rapidly growing industrial trades such as textiles were pushed back. Statutory controls over apprenticeships in cloth manufacturing were repealed in 1733 and those governing hat making followed in 1777. In 1809 the Weavers Act of 1555, which placed limits on the number of looms which could be operated in one place, was repealed. It was lobbying by engineering employers which led to the repeal of the general apprenticeship provisions of the Statute of Artificers in 1813 and the last vestiges of municipal controls over access to the trades were removed in 1835.

The legal shift was reflected in the political economy of the time, which has echoes with our own. In *The Wealth of Nations* Adam Smith condemned the 'pretence' that guilds ('corporations') operated for the 'better government of the trade', insisting that 'the real and effectual discipline which is exercised over a workman, is not that of his corporation, but that of his customers'.[26] By 1799 Lord Chief Justice Kenyon could refer to the 'natural reason' of the market as the best guarantor of quality: 'if the manufacture is not good, there is no danger of its having a favourable reception in the world'.[27] The leading legal treatise on apprenticeship argued in the same year for the 'free competition' through which 'the labour and capital of every individual will always be directed by him into the channel most conducive to his ultimate interest', noting that 'the interests of whole community must in general be most effectually insured, when that of each individual is most judiciously consulted'.[28]

The story of Luddism is a part of this wider narrative.[29] Luddism was a movement which briefly flourished in the east Midlands, south Yorkshire and east Lancashire in the 1810s. It was violently suppressed and many of its leaders were executed or imprisoned. The Luddites are known now as 'machine breakers' but their protests had a specific focus, namely employers breaching the rules for the protection of the trades, including entry requirements, apprenticeship

regulations, and customary wage rates. Luddism peaked in 1811-12 when magistrates in Nottinghamshire refused to convict hosiery employers for breach of minimum wage rules applicable to that trade. The machines which were broken were those belonging to the employers paying 'illegal' wages. Machine breaking was a traditional form of enforcement in framework knitting and other trades which had once routinely exercised the 'right of search'.[30]

Thus the background to Luddism was the selective enforcement of legal rules. It was not simply that employers were ignoring the rules; as we have seen, the courts actively colluded in the process, refusing to enforce apprenticeship laws on the grounds that that do so would be inconvenient to the newly propertied among 'the first families of the kingdom'.[31]

New technologies, by their nature, often operate on the borderline of what is legal. One lesson of Luddism is that if courts and regulators decline to enforce existing rules for the protection of trades and livelihoods on the grounds that they do so would be 'inconvenient' for those newly empowered by technological change and the opportunities for private accumulation which it represents, violence and disorder may well follow.

Another lesson from history is that democratic resistance to the disruptive effects of technological change is never simply 'futile'. It is, instead, part of the process through which new forms of social organisation, and new types of legal rules, emerge to mediate the impact of technologies. Luddism failed to stop the rise of the factory. However, by the 1850s, it was in these same regions of the country, and in respect of many of the same industrial trades, such as framework knitting, that collective bargaining between employers and trade unions was taking root.[32] Thus the origins of the modern labour law system in Britain are to be found in the popular resistance of Luddism and similar movements.

4. Normalisation strategies in the digital economy: the case of Uber

The violence of Luddism was a reaction to what might be called a strategy of 'normalisation' on the part of the beneficiaries of technological change, that is, a concerted effort to have existing laws disapplied and new ones adopted to better support their interests.[33] The same process of normalisation is underway today in the emerging economy of platforms, machine learning and big data. Corporations such as Uber (it is not the only example, simply the most prominent) invest heavily in lobbying and litigation to overturn laws which increase their costs. We see this in the attempts by Uber's UK subsidiary to have taxi licensing laws relaxed in its favour, a strategy which was vindicated by a court ruling in 2015.[34] In 2016 the European Commission published a communication[35] suggesting that attempts by member states to set regulatory standards for the

platform economy would amount to a restriction of market access under the (highly contestable) logic of the *Viking* and *Laval* decisions.[36]

We may, however, have arrived at a turning point in the regulatory response to platforms. In 2016 a London employment tribunal ruled that Uber drivers were, in principle, entitled to minimum wage protection under the National Minimum Wage Act 1998,[37] and in 2017 Transport for London, in its capacity as regulator, ruled that Uber was not a fit and proper business and revoked its licence to operate in the UK capital.[38] Both decisions are being appealed and Uber is, in the meantime, continuing to operate in London and other British cities much as before. However this litigation turns out, we have probably seen the first steps in a process which see companies such as Uber come under increasing regulatory scrutiny.[39]

The gist of Uber's argument in the minimum wage case was that it was an intermediary, not an employer; in essence, an updated version of the argument used by the merchant-capitalist in *Hobbs* v. *Young* over three centuries ago. It appears from the employment tribunal ruling that Uber makes extensive of standard form terms and conditions to set up a web of contracts, the effect of which, according to Uber in the recent minimum wage litigation, is to deflect various legal liabilities. So far this argument has not been accepted but at the time of writing (February 2018) the litigation has some way still to run.

A passenger makes a booking with Uber by firstly downloading the Uber app on to their mobile phone. When they log on to the app they must indicate their acceptance of Uber's terms and conditions to proceed any further with the transaction. The terms and conditions purport to create a contract between the passenger and the Dutch-incorporated Uber subsidiary which retains intellectual property rights in the app. These terms and conditions provide that Uber 'does not itself provide transportation services and is not a Transportation Provider'; it is instead 'an intermediary between yourself and the Transportation Provider'.[40]

The term 'Transportation Provider' generally refers to the driver, but Uber also contemplates a situation in which the driver is contracted to another person, initially called a 'partner'[41] and in the latest iteration 'customer',[42] who is running a transport business using Uber's services. In the context of the London litigation, the 'partners' or 'customers' were also drivers.

According to the terms and conditions set out in the judgment of the Central London Employment Tribunal, Uber maintains that it is contracting to provide a software service, the use of the app, to the 'customer', and that the latter, in turn is running an independent business, which then contracts with the passenger for the provision of a transport service. This is the basis for the argument that Uber is the intermediary which links the passenger and driver; aside from supplying the app, it has no contractual relationship with the passenger, and its relationship with the driver is that of a service supplier, not an employer.[43]

In a further complication, Uber requires the 'customer' to enter into an agreement with the driver (the 'Driver Addendum'). This agreement states that Uber may deactivate the app or otherwise restrict access to it if (among other things) the driver violates its terms or otherwise 'causes harm to Uber's or any of its Affiliates' brand, reputation or business as determined by Uber in its sole discretion'.[44] The Driver Addendum also contains the type of employment status-denying clauses which have become commonplace in the UK since the 1990s.[45] For example:

> 'Uber and its affiliates in the Territory do not, and shall not be deemed to, direct or control Driver generally or in Driver's performance of Transportation Services or maintenance of any Vehicles. Driver acknowledges that neither Uber nor any of its Affiliates in the Territory controls, or purports to control: (a) when or for how long Driver utilise the Driver App for Uber Services; or (b) Driver's decision… to decline or ignore a User's request for transportation Services, or to cancel an accepted request… for Transportation services'.[46]

Although Uber goes to considerable lengths to disclaim any employer status, and to deny that it is a party to the driver agreement, it also claims the right to enforce that agreement as a 'third party beneficiary' under the statutory exception (contained in the Contracts (Rights of Third Parties) Act 1999) to the common law rule of privity of contract:

> 'Customer acknowledges and agrees that Uber is a third party beneficiary to each Driver Addendum, and that, upon a Driver's execution of the Driver Addendum (electronically or otherwise), Uber will have the irrevocable right… to enforce the Driver Addendum against the Driver as a third party beneficiary thereof'.[47]

It is against this background that the claim for minimum wage protection in *Aslam* v. *Uber BV* was framed.[48] In UK law, the right to the minimum wage is vested in 'workers', a category which is not confined to employees employed under a contract of employment, but includes those who contract to supply personal services to another 'whose status in not by virtue of the contract that of a client or customer of any profession of business undertaking carried on' by them.[49] This extended category (the 'limb (b) worker') is intended to capture cases in which a worker provides labour services to another person or entity on which they are economically dependent, but where one or more of the formal indicia of employee status, such as control or 'mutuality of obligation', are lacking. The key to the test is not so much the identification of *employment status* with the putative worker, as the identification of *business status* with one or other of the parties. If the claimant is in business on their own account, they will not be a 'limb (b) worker'. If they are not running a business, but the person they are contracting with is, then they are highly likely (other things being equal) to have limb (b) status, and hence the protection of minimum wage legislation (as well as certain other basic labour standards such as those relating to working time).[50]

The complex chain of contracts set out in *Aslam* v. *Uber BV* could be read as deflecting Uber's 'business status' away from the company and on to its drivers. The gist of the employment tribunal ruling in *Aslam*, however, was that the terms and conditions were, to this extent, a 'sham', intended to mask an underlying 'reality' according to which Uber was running a transportation business which was dependent on the labour services provided by its drivers. As such, Uber had the responsibility, as employer, to respect the legally binding minimum wage.

To get to this point, the employment tribunal had to take a robust approach to the characterisation of Uber's terms and conditions. Following the Supreme Court's ruling in *Autoclenz* v. *Belcher*[51] in 2011, it is open to courts and tribunals to take a much more proactive view than in the past of employer's attempts to use contractual boilerplate to deflect statutory liabilities. Thus the tribunal was able to look beyond the terms and conditions in an attempt to clarify the 'true' nature of Uber's operation. In this context it was relevant that Uber was operating a private vehicle hire (PVH) business under a licence granted by the local regulator, Transport for London, and that its branding and marketing mostly described it as a taxi business.[52] It was, the tribunal concluded, 'unreal to deny that Uber is in business as a supplier of transportation services',[53] echoing a similar finding in the California case of *O'Conno*r v. *Uber Technologies Inc.* (2015):[54] 'Uber does not simply sell software, it sells rides…[It] is no more a "technology company" than Yellow Cab is a "technology company" because it uses CB radio to dispatch taxi cabs'.
The other side of the coin in *Aslam* was that the drivers were not running independent businesses: 'the notion that Uber in London is a mosaic of 30,000

small businesses linked by a common "platform" is to our minds faintly ridiculous'.[55] On the one hand, the idea of a passenger-driver contract was a 'pure fiction' given that the driver is unaware of the passenger's identity, does not know the destination of the journey until it begins, and receives a fee set by Uber. On the other hand, Uber exercises control over the drivers in various ways: it interviews and recruits the drivers, controls information concerning the passenger, logs drivers off the app if they do not accept trips or cancel trips, penalises drivers if they depart from the set route, fixes the fare, imposes quality controls, rates drivers according to their performance, deals with passengers' complaints, and reserves the power unilaterally to amend drivers' terms and conditions. The tribunal also considered that 'Uber accepts the risk of loss which, if the drivers were genuinely in business on their own account, would fall upon them', by, among other things, accepting liability for passenger frauds, or damage caused by passengers to vehicles.[56]

The finding that Uber runs a business was a necessary, but not sufficient, step to finding them liable for minimum wage obligations. The tribunal also had to find that there was a contract between Uber and the drivers under which the latter agreed to provide personal labour services to Uber.[57] To find that there was such a contract, the tribunal not only had to ignore the complex terms and conditions put in place by Uber, but also infer the existence of a contract from the conduct of the parties. It also had to supply some clarity on the issue of when the contract came into being and when, for the purposes of minimum wage legislation, the driver was 'working' under it.[58]

The tribunal ruled that since the driver is not under an obligation to switch on the Uber app at any particular point in time, there is no overarching or 'umbrella' contract of employment between the parties. Thus the drivers are not 'employees' entitled to, among other things, unfair dismissal protection. At best, as we have seen, they may be limb (b) workers employed to provide personal labour services. The tribunal ruled that a driver had limb (b) status once they switched on the app within the territory in which they were authorised to work and were 'able and willing to accept assignments'. The terms of this agreement are hard to identify given Uber's insistence that it does not exist. It is, nevertheless, clearly established that a contract for work or employment can be formed by conduct.

But even if the existence of a contract to provide labour services is established, obstacles remain to a successful minimum wage claim. This is because a claimant must establish the right to be paid the minimum wage in respect of a particular period of 'working time'. Only once this period is established can the claimant's statutory entitlement, which is based on the applicable hourly rate, be calculated. The tribunal ruled, as we have seen, that the driver's working time consists of the

time during which the app is switched on and the driver is therefore ready and willing to accept rides.[59]

This is, however, just one step in establishing the driver's entitlement. It is also necessary to determine which type of 'work' they are doing. The calculation of the wage is reasonably straightforward if the worker is employed on a salaried basis or according to a time rate; it is less straightforward but still, in principle, ascertainable, if the basis for payments is an agreed piece rate or 'output work'. In *Aslam* the tribunal ruled that none of these categories applied, with the result that the case fell under the residual and somewhat problematic category of 'unmeasured work'.[60] The tribunal did not spell out what this would mean in practice (as the point was not relevant to the ruling it was making) except to conclude that it did not include time spent travelling to and from home when the app was not switched on. If this part of the tribunal's ruling is followed in future, claimants may find hard to substantiate a significant claim for non-payment of wages, even if they are successful in demonstrating worker status.

How should we assess this litigation? Underneath the contractual complexity of the *Aslam* case are issues which are not unfamiliar from previous periods of rapid technological change. Uber's business model turns on the use of platform technology to reconfigure the employer as an intermediary. By these means it can avoid regulatory costs associated with labour law (and also with fiscal and social security law, in so far as they attach obligations to an employer). Uber's claim is implausible as it is exercising some very familiar employer functions: it organises the mode of production, controls its labour force, and extracts a surplus from the resulting process. The app is a means to an end, the end being regulatory arbitrage and the shifting of risk on to passengers and drivers who are no longer protected by relevant laws and regulations, and ultimately, through the loss of fiscal revenue, on to the state.

From this point of view, it is open to courts and regulators to take a functional view of protective legislation and to supply it with a flexible meaning that is capable of going beneath surface transactions. This is what the employment tribunal did in *Aslam* when it referred to the 'reality' of the relationship and contrasted it with Uber's 'fictions'. Transport for London's decision to revoke Uber's PVH licence can be seen in the same light: Uber's characterisation of itself as a 'technology company' does not give it exemption from rules designed to ensure passenger safety.

Rulings of this kind are only part of a continuing process as Uber and its equivalents in other sectors attempt to normalise their operations in legal terms. As in the first industrial revolution, this will take the form, initially, of litigation aimed at achieving restrictive interpretations of existing statutes. If that does not work, the next step will be lobbying to have laws repealed or disapplied (as envisaged by the Commission's 2016 recommendation on the digital economy). If that too is unsuccessful, and platform companies find themselves unable to avoid the application of existing laws, we can expect them to take a scorched earth approach to compliance, appealing rulings as far as they can, and implementing them to the most minimal extent possible.

None of this amounts to a good reason for courts and officials ceasing to apply protective regulations. Nor would a strategy of repealing laws and regulation in order to speed up the process of creative destruction be the right way forward. We should distinguish here between superficial and structural accounts of technological change. Superficially, features of 'industry 4.0' such as platforms, apps and machine learning might seem to signify a new departure from existing technologies, which will require a new legal framework as new transaction-types and organisational forms emerge. Structurally, today's digital technologies are an extension of those already established at the time of the first industrial revolution. Their genesis lies not only or even primarily in scientific discoveries but in the dynamics of capitalist growth and accumulation, which in its essence, again, are unchanged since the onset of industrialisation. Under these circumstances, there is no clear basis for arguing that labour law, as a mode of regulation which grew out of and responded to the rise of capitalist forms of production,[61] has now become otiose or redundant: it is more necessary than ever.

5. Conclusion

Much of the debate around the digital economy and 'industry 4.0' is based on the belief that it really will be different this time. The hypothesis that we stand on the cusp of a radical change is hard to disprove as we have no reliable data concerning the future. Recalling the Jacquard Loom, however, we might take the view that machine learning is just the most recent phase of digitalisation which will, as before, permit the appropriation of knowledge currently dispersed across routines and structures and embodied in the rules of trades and professions which may well be rendered uneconomic. It will permit new forms of accumulation and enable novel power grabs. At the same time, it will create complementary skills and encourage new professional formations. In these respects, the future of work will not be fundamentally different from its past.

Digitalisation is unlikely to bring about a radical change on the same level as the transition from the guild to the factory which took place in the first decades of the

nineteenth century. That fundamental transition involved a move away from producer-owned forms of enterprise to modes of production based on the power of finance: henceforth, capital hired labour, not the reverse. Given that the digitalisation of today is being driven by multinational firms seeking to establish themselves as quasi monopolies, funded by a combination of venture capital and leveraged debt, it is something of a stretch to see in this development any kind of return to the guild as the predominant model of economic organisation.

If the employment model were to wither away, it is unlikely to be replaced by the guild. Much more likely is a return to the type of labour market arrangements which existed in industrial economies before the employment contract established itself as the principal frame of reference for forms of subordinate or dependent labour. This was a world in which the model of reciprocal, continuing obligations between employer and employee was available to a minority of the labour force, mostly managerial and professional workers. For manual workers in industry and agriculture, the pre-modern service relationship operated alongside various forms of casual and precarious work which offered little by way of job security. The evolution of industrial societies which saw these forms displaced by the 'standard' employment contract was a slow and gradual one which was achieved against the backdrop of the rise of collective bargaining and the expansion of welfare states in the decades following the last quarter of the nineteenth century.

The integrated model of the contract of employment that labour lawyers have become familiar with is a fragile achievement, and there is nothing inevitable about its survival. If it fails to survive, however, it will not be because the model is inherently incompatible with the technology of the digital economy. The employment contract is a flexible form which is not tied to the integrated industrial enterprise of the mid-twentieth century. As the *Uber* litigation shows, the juridical concepts which underpin the employment model are capable of evolving to meet new turns in the law-technology cycle. Legal evolution, not deregulation, is the way forward for labour law.

Notes

1 On the theory of legal autopoiesis, see N. Luhmann, *Law as a Social System*, trans. K. Ziegert, ed. F Kastner, R. Nobles, D. Schiff and R. Ziegert (Oxford: OUP, 2004); G. Teubner, *Law as an Autopoietic System* (Oxford: Blackwell, 1993).

2 See generally S. Deakin and F. Wilkinson, *The Law of the Labour Market: Industrialisation, Employment and Legal Evolution* (Oxford: OUP, 2005).

3 F. Reid and M. Harrigan, 'Anonymity in the Bitcoin system' in Y. Altshuler, Y. Elovici, A. Cremers, N. Aharon and A. Pentland (eds), *Security and Privacy in Social Networks* (Frankfurt: Springer 2013); J. Bohannon, 'The Bitcoin busts' (2016) 351 *Science* 1144.

4 R. Stokes, 'Virtual money laundering: the case of Bitcoin and the Linden dollar' (2012) 21 *Information and Communications Technology Law* 221; D. Bryans, 'Bitcoin and money laundering: mining for an effective solution' (2014) 89 *Indiana Law Journal* 441; A. Guadamuz and C. Marsden, 'Blockchains and Bitcoin: regulatory responses to cryptocurrencies' (2015) 20 *First Monday* 12.

5 J. Isom, 'As certain as death and taxes: consumer considerations of Bitcoin transactions for when the IRS comes knocking' (2013) <ssrn.com/abstract=2365493>; T. Slattery, 'Taking a bit out of crime: Bitcoin and cross-border tax evasion' (2014) 39 *Brooklyn Journal of International Law* 829; W. Egbertsen et al, 'Replacing paper contracts with ethereum smart contracts' (2016) . https://wesleyegbertsen.nl/user/pages/03.mijn-werk/ethereum-onderzoek/replacing-paper-contracts.pdf (accessed 27 February 2018).

6 R. Anderson, I. Shumailov, A. Rietmann and M. Ahmed, 'Bitcoin redux' working paper, Cambridge University Computer Laboratory, February 21 2018, at p. 1.

7 These are explained by Anderson et al., ibid.

8 The rule in *Clayton's Case*, *Devaynes* v. *Noble* (1816) 1 Mer 829, 572: see D. Fox, 'Cyber-currencies in private law' working paper, University of Edinburgh, 2016.

9 Anderson et al., 'Bitcoin redux', pp. 14-19.

10 D. Fainéant and K. Kockelman, 'Preparing a nation for autonomous vehicles: opportunities, barriers and policy recommendations' (2015) 77 *Transportation Research: Policy and Practice* 167; W. Schoitsch, C. Schmittner, Z. Ma and T. Gruber, 'The need for safety and cyber-Security co-engineering and standardisation for highly automated automotive vehicles', in T Schulz, B Müller and G Meyer (eds) *Advanced Microsystems for Automotive Applications 2015* (Frankfurt: Springer 2015).

11 P. David, 'Clio and the economics of QWERTY' (1985) 75 *American Economic Review* 332; B. Arthur, *Increasing Returns and Path Dependence in the Economy* (Ann Arbor, MI: Michigan University Press, 1994).

12 M. Roe, 'Chaos and evolution in law and economics' (1996) 109 *Harvard Law Review* 641.

13 S. Deakin, 'Evolution for a time: towards a theory of legal memetics' (2003) 55 *Current Legal Problems* 1.

14 J. Schumpeter, *Capitalism, Socialism and Democracy* (London: Allen and Unwin, 1943).

15 D. Autor, 'Why are there still so many jobs? The history and future of workplace automation' (2015) 29 *Journal of Economic Perspectives* 3.

16 J. Essinger, *Jacquard's Web: How a Hand Loom Led to the Birth of the Information Age* (Oxford: OUP, 2004).

17 See generally Deakin and Wilkinson, *The Law of the Labour Market*, pp. 51-61.

18 5 Elizabeth 1, c. 4, s. 21.

19 1 Show KB 266.

20 *Case of the Tailors of Ipswich* (1615) 11 Co Rep 53a.

21 *Tolley's Case* (1615) Calthrop 9.

22 *Raynard* v. *Chase* (1756) 1 Burr 6.

23 *Smith* v. *Company of Armourers* (1792) Peake 199.

24 *Kent* v. *Dormay* Kingston Assizes, August 14 1811, reported in J. Chitty, *A Practical Treatise on the Law Relating to Apprentices and Journeymen, and to Exercising Trades* (London: Clarke, 1812), at p. 122.

25 18 & 19 Charles II, c. 8.

26 A. Smith *An Inquiry into the Nature and Causes of the Wealth of Nations* (London: Strahan and Cadell, 1776).

27 *Smith* v. *Company of Armourers* (1799) Peake 199, 201.

28 Chitty, *Law Relating to Apprentices and Journeymen*, at p. 2.

29 E.P. Thompson, *The Making of the English Working Class* (London: Gollancz, 1963).

30 Ibid.

31 *Kent* v. *Dormay* Kingston Assizes, August 14 1811.

32 Deakin and Wilkinson, *The Law of the Labour Market*, pp. 209-13.

33 S. Deakin and C. Markou, 'London Uber ban: regulators are finally catching up with technology' *The Conversation*, 25 September 2017, https://theconversation.com/london-uber-ban-regulators-are-finally-catching-up-with-technology-84551 accessed 27 February 2018.

34 *TfL* v. *Uber & Others* [2015] EWHC 2918 (Admin).

35 *A European Agenda for the Collaborative Economy* Brussels, 2.6.2016, COM(2016) 356 final.

36 Case C-438/05 *International Transport Workers Federation* v. *Viking Line APB* [2007] ECR-I 10779; Case C-341/05 *Laval un Partneri Ltd* v. *Svenska Byggnadsarbetareförbundet* [2007] ECR-I 11767.

37 *Aslam* v. *Uber BV* Case Nos. 220250/2015, 28 October 2016, upheld on appeal to the Employment Appeal Tribunal, *Uber BV* v. *Aslam* Appeal No. UKEAT/0056/17/DA, 10 November 2017.

38 Deakin and Markou, 'London Uber ban'.

39 Another significant step was the decision of the CJEU in Case C-434/15 *Asociación Profesional Elite Taxi* v. *Uber Systems Spain SL*, Judgment of 20 December 2017: 'an intermediation service such as that at issue in the main proceedings, the purpose of which is to connect, by means of a smartphone application and for remuneration, non-professional drivers using their own vehicle with persons who wish to make urban journeys, must be regarded as being inherently linked to a transport service and, accordingly, must be classified as 'a service in the field of transport' within the meaning of Article 58(1) TFEU' (at [50]).

40 *Aslam* v. *Uber BV* (ET), at [28].

41 This was the term used in the 2013 terms and conditions (the 'Partner Terms') analysed by the ET in *Aslam* ([32]-[35]).

42 This is the terminology used in the 'New Terms' issued by Uber in 2015: *Aslam* (ET) at [36]-[38].

43 *Aslam* (ET), at [37].

44 *Aslam* (ET), at [38].

45 See B. Burchell, S. Deakin and S. Honey, *The Employment Status of Individuals in Non-standard Employment* (London: Department of Trade and Industry, 1999).

46 Ibid.

47 *Aslam* (ET), at [37].

48 Case Nos: 2202550/2015, 28 October 2016.

49 National Minimum Wage Act 1998, s 54(3). See also, Employment Rights Act 1996, s. 230; Working Time Regulations 1998 (SI 1998/1833), reg. 2(1); Deakin and Morris, 2012: ch. 3.

50 See S. Deakin and G. Morris, *Labour Law* 6th ed. (Oxford: Hart, 2012), ch. 3.

51 [2011] UKSC 41.

52 *Aslam* (ET), at [58].

53 *Aslam* (ET), at [89].

54 Case 3: 13-cv-034260EMC, 11 March 2015.

55 *Aslam* (ET) at [90]. To similar effect is the EAT judgment, *Uber BV v. Aslam*, at [107].

56 *Aslam* (ET), at [92]; *Aslam* (EAT), at [115]-[116].

57 *Aslam* (ET) at [100]; *Aslam* (EAT) at [90].

58 *Aslam* (ET), at [100]. The relevant statutory context to this part of the claim is provided by the Working Time Regulations, SI 1998/1833, reg. 2(1), and the National Minimum Wage Regulations, SI 2015/621, Part 5.

59 *Aslam* (ET), [121]-[122].

60 *Aslam* (ET), [127]. To similar effect is the judgment of the EAT, at [121]-[125].

61 Deakin and Wilkinson, *The Law of the Labour Market*.

References

Anderson, R., Shumailov, I., Rietmann, A. and Ahmed, M. (2018) 'Bitcoin redux' Working Paper, Cambridge University Computer Laboratory, February.

Arthur, B. (1994) *Increasing Returns and Path Dependence in the Economy* (Ann Arbor, MI: Michigan University Press).

Autor, D. (2015) 'Why are there still so many jobs? The history and future of workplace automation' *Journal of Economic Perspectives*, 29: 3-30.

Bohannon, J. (201l6) 'The Bitcoin busts' (2016) *Science*, 351: 1144-1146.

Bryans, D. (2014) 'Bitcoin and money laundering: mining for an effective solution' *Indiana Law Journal*, 89: 441-472.

Burchell,B., Deakin, S. and Honey, S. (1999) *The Employment Status of Individuals in Non-standard Employment* (London: Department of Trade and Industry, 1999).

Chitty, J. (1812) *A Practical Treatise on the Law Relating to Apprentices and Journeymen, and to Exercising Trades* (London: Clarke).

David, P. (1985) 'Clio and the economics of QWERTY' *American Economic Review*, 75: 332-37.

Deakin, S. (2003) 'Evolution for a time: towards a theory of legal memetics' 55 *Current Legal Problems*, 55: 1-42.

Deakin, S. and Markou, C. (2017) 'London Uber ban: regulators are finally catching up with technology' The Conversation, 25 September 2017, https://theconversation.com/london-uber-ban-regulators-are-finally-catching-up-with-technology-84551.

Deakin, S. and Morris, G, (2012) *Labour Law* 6th ed. (Oxford: Hart).

Deakin, S., and Wilkinson, F. (2005) *The Law of the Labour Market: Industrialisation, Employment, and Legal Evolution* (Oxford: OUP).

Egbertsen, W., Hardeman, G., van den Hoven, M., van der Kolk, G. and Rijsewikj, A. (2016) 'Replacing paper contracts with Ethereum smart contracts' https://wesleyegbertsen.nl/user/pages/03.mijn-werk/ethereum-onderzoek/replacing-paper-contracts.pdf (accessed 27 February 2018).

Essinger, J. (204) *Jacquard's Web: How a Hand Loom Led to the Birth of the Information Age* (Oxford: OUP).

Fainéant, D. and Kockelman, K. (2015) 'Preparing a nation for autonomous vehicles: opportunities, barriers and policy recommendations' *Transportation Research: Policy and Practice*, 77: 167-181.

Fox, D. (2016) 'Cyber-currencies in private law' working paper, University of Edinburgh.

Guadamuz, A. and Marsden, C. (2015) 'Blockchains and Bitcoin: regulatory responses to cryptocurrencies' *First Monday*, 20: 12, available at: http://journals.uic.edu/ojs/index.php/fm/article/view/6198/5163.

Isom, J. (2013) 'As certain as death and taxes: consumer considerations of Bitcoin transactions for when the IRS comes knocking' (2013), available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2365493.

Luhmann, N. (2004) *Law as a Social System*, K. Ziegert (trans.), F. Kastner, R. Nobles, D. Schiff and R. Ziegert (ed.) (Oxford: OUP).

Reid, F. and Harrigan, M. (213) 'Anonymity in the Bitcoin system', in Y. Altshuler, Y. Elovici, A. Cremers, N. Aharon and A. Pentland (eds), *Security and Privacy in Social Networks* (Frankfurt: Springer 2013).

Roe, M. (1996) 'Chaos and evolution in law and economics' *Harvard Law Review*, 109: 641-668.

Schoitsch, W., Schmittner, C., Ma, Z. and Gruber, T. (2015) 'The need for safety and cyber-Security co-engineering and standardisation for highly automated automotive vehicles', in T Schulz, B Müller and G Meyer (eds) *Advanced Microsystems for Automotive Applications 2015* (Frankfurt: Springer).

Schumpeter, J. (1942) *Capitalism, Socialism and Democracy* (New York: Harper).

Slattery, T. (2014) 'Taking a bit out of crime: Bitcoin and cross-border tax evasion' *Brooklyn Journal of International Law*, 39: 829-873.

Smith, A. (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations* (London: Strahan and Cadell.

Stokes, R. (2012) 'Virtual money laundering: the case of Bitcoin and the Linden dollar' *Information and Communications Technology Law*, 21: 221-226.

Thompson, E. (1963) *The Making of the English Working Class* (London: Gollancz).