

Work and Employment in the Information Economy: Deep Transformations with Polarising Spatial Outcomes

Peter E Lloyd

University of Liverpool (Retired) and Peter Lloyd Associates

<https://www.peter-lloyd.co.uk/papers-and-blogs/>

Abstract

Bringing together the debate on the digital transformation with that on growing spatial inequality, the paper suggests that we need to be concerned about short term disruptions with politically dangerous possibilities. While the new digital technologies hold the promise of huge gains for society generally and for segments of the labour force, their short-term impact on many people and places may turn out to be quite the opposite. In a fast-shifting redistribution of work and activity, social and spatial polarisation is accelerating. The arrival of AI alongside the internet platforms is changing - with unprecedented speed and penetration - the methods for producing and extracting value from human labour. This is running far ahead of questions about workplace justice and fairness. Reaction is coming in the form of political turbulence with a distinctive geography. In distressed regions and localities people are becoming anxious about the impact of external forces they cannot respond to. The paper explores how these forces, affecting the day-to-day work-life experience, are coming from a deep transformation of the labour market. Jobs and employment contracts are changing quickly and in ways the Standard data series on employment do not allow us to grasp. The rise of platform working and the gig economy is adding more contingent and precarious work. It is rapidly colonising those segments of the labour market already offering low and static wages and little scope for progression. Overall control has defaulted to that handful of mega-companies at the heart of the digital internet economy. Spatially, polarisation is emerging out of an accelerating shift – global, national regional and especially local – in the opportunity to “work hard, do well and thrive”. This is being articulated across a “connected but splintered” geographical mosaic of places. There are people and places for whom the digital transformation is a Godsend. But there are others where it’s wider effects are seen through threats to life and prospects. A better balance is essential. To achieve this, policy must take a more informed and realistic view. Accepted approaches founded on investment and trickle-down need fundamental reappraisal for the places left behind. Here especially, governance, education and training need to be wholly re-imagined to meet from a human-centred perspective a world “turned upside down”.

Table of Contents

.....	1
1. Work and Employment in an Information Economy	5
a) Adding the digital transformation to the debate about spatial inequality	5
b. Short term disruptions with dangerous possibilities	5
2. The Fourth Industrial Revolution and the Conditions for Labour	6
a. New jobs will come; but when, where and for whom?.....	6
b. The technologies and their effects in context: Intersections and interactions:	7
c. Huge potential gains but “distresses” for some	7
3. A Fast Shifting Redistribution of Work and Opportunity	8
a. Deregulation, automation and entirely new marketplaces	8
b. Intensification of workplace practices	8
c. Balancing the account: the shape of new work opportunities.....	9
4. The Growth of the Contingent Labour Market	10
a. The sectors most at risk to job shifts.....	10
b. More part-time, zero hours and short-term jobs colonising labour opportunity.....	11
c. Watered down job and income multipliers	11
5. The Extension of Platform Work and the Gig Economy	12
a. Digital work and its evolving forms	12
c. Faster response times: contingency and more precarious work.....	13
d. The scale and speed of the evolving trends	14
e. Workers in work struggling financially	14
6. Dominant Players in Control	15
a. Big Data and Oligopoly	15
7. Bringing in the Geography: Place to Place Differences in Outcomes	16
b. Transformed working conditions by place	16
c. Concentrations of the downside: The “places that don’t matter”	17
d. Labour market and place transformation in the downside areas.....	18
e. The upside places; another world	18
f. Splintered yet connected economic spaces	19
8. Policy: Taking a More Informed and Realistic View	20
a. Measures to ensure decent work and rewards.....	20
b. Building and developing skills for future work	21
c. A wider view of skills	21
d. The foundational economy as a platform.....	22

e. The vital importance of lifelong learning	23
9. Conclusions	24
a. Challenging some rooted assumptions of policy practice.....	24
b. Breaking out: Re-imagining education and training to meet the new world	24
BIBLIOGRAPHY	25
APPENDIX 1	28

1. Work and Employment in an Information Economy

a) Adding the digital transformation to the debate about spatial inequality

When it comes to public policy for the labour market and employment - whether it be national, regional or local - we need to take on board the massive changes we know will confront us in upcoming decades as a product of the digital transformation. We already know that, although the world is becoming increasingly interconnected in the internet (of things) era; social and spatial divisions are widening, and places are becoming wider apart in terms of wealth and opportunity.

For those places outside the favoured clusters of the Information Economy; some people are finding it harder to access routes to higher skilled work. Low paid, insecure jobs are colonising more of the available employment opportunity. The debate of the moment around this is on the geography of “*places that don't matter*” (Rodríguez-Pose, 2018). What currently pushes this into particular prominence now, however, is the wake-up call that has come from seeing a strong association between what is going on locally in disadvantaged places and the rise in the politics of *tribalism, nativism and the populist right*. The political earthquakes of Brexit and Trump and their connection to particular geographies have revived academic and media interest in what Doreen Massey once called “*Mosaics of Spatial Inequality*” (Massey, 1995). Maps with details of local and regional pockets of inequality are back in vogue for newspaper copy looking at the geographical and political consequences of contemporary economic processes. The changes are operating a speed and on such a scale that conventional forms of local and regional governance are struggling to take on board a much more uncertain future.

b. Short term disruptions with dangerous possibilities

While we have been here before, the argument of this paper is that - going forward – we are entering *dangerous new territory*. What lies in front of us, is a transformation potentially so fundamental that we have to start re-thinking the whole future of work, opportunity and well-being for a substantial segment of the population. It is not that this “shock of the new” – on the advent of AI and robotization – will be unequivocally bad. Indeed, the evidence of past technological revolutions indicates that more jobs are likely to be created overall than are lost (EPSC, 2019). The real concern is that, on the way to this better state of things, we will have to pass through really significant *short-term disruptions* where gains and losses play out in greater extremes from place to place. If the question of the places that don't matter bothers us now, this is as nothing to what we might have to expect for the future.

To get us through this, we will need very deliberately to factor spatial consequences into our views of employment under the digital transformation and recognise the implications of what these “short term” radical transformations are likely to present - especially in the spill-over to the politics of dissent. Epistemologically, we will need to add greater *granularity* into our understanding of the impact of the digital transformation on the lives of people and places. While macro-level theorisations of the digital transformation and its impact will still be important, we need to see them in greater detail and contextualise them locally if we are to

avoid witnessing more political earthquakes and their widespread and powerful social and political impact.

2. The Fourth Industrial Revolution and the Conditions for Labour

a. New jobs will come; but when, where and for whom?

As the labour market transforms under the digital revolution, some key questions for society are — what will ‘work’ mean, what sort of jobs will exist, how will ‘workers’ be remunerated, where will the employers be located, and who will regulate the conditions of employment? Can it be, perhaps, that for some people in some places, the whole idea of a route to the good life through access to stable, well paid jobs is coming into question - even if they strive to improve the skills they can offer? Are people in some local places right in beginning to wonder just how they and their offspring are going to find decent jobs at all¹?

Most existing policy practice looks toward business investment, the growth of firms and the jobs they bring through trickle-down as the prime ways to provide for local employment development. Through this, the ambition everywhere has been to compete to get the best businesses to come and invest locally. Some places have always done better at this than others but – against a general background of economic growth - every region or locality could imagine itself as having some chance of capturing a reasonable share of the available new jobs. This may still be true in the long run. But where the concern is with the *short-run and its disruptions*, the question is; do we face a new set of circumstances that will (or should if we take them seriously) condition the shape of what emerges in the long run? Specifically, is there a specific role geography will play in determining those places where job replacing technologies will play out most intensively (Frey, 2019) and for understanding their consequences?

Wider than jobs, are we faced, in fact, with conditions for some people and places that will “upend the conditions of everyday life” as suggested in the following:

Today’s emerging technologies such as Artificial Intelligence (AI), augmented and virtual reality, home robots, and cloud computing, to name only a few, have advanced capabilities that will be nothing short of transformative in terms of their impacts on society. They will intersect and interact with powerful demographic, economic, and cultural forces to upend the conditions of everyday life and reshape how many live and work in 2030. (Paraphrased from Dell Technologies and the Institute for the Future (2017).

It is the last point that deserves special emphasis - *intersections and interactions*. Through this perspective, we avoid the trap of remaining within some kind of sectoral or topical thought-silo to look at what is going on. The effects of the transformation will run far and wide - working through the labour market and on to the distribution of wealth and opportunity, opening up pathways of opportunity but at the same time actively or, by default, closing off channels that currently exist for significant sections of the labour force and

¹ There will, of course. Always be some local jobs in localised personal services like hairdressing, care, house and garden services and motor repair – but these tend to be limited to the capacity of the marketplace and, for young people, starter jobs at best.

population². They will undoubtedly have political consequences. Let us begin to explore this proposition by getting to grips with some of the key features of the digital transformation.

b. [The technologies and their effects in context: Intersections and interactions:](#)

For the purposes of the discussion that follows, the term digital transformation is used as a catch-all - covering the influence of all those things like AI, VR, AR, robots, the Internet of Things (IoT), the cloud, blockchains and so on. In combination, they are certainly powerful enough to “upend the conditions of everyday life” but they do not do this by themselves. What we are experiencing is not some “*deus ex machina*” derived from dominantly scientific processes and imaginings. Critically, the transformation has emerged in the last three decades under Neoliberalism (Brenner, Peck, & Theodore, 2010, Castree, 2006). The choices that structured its evolving form were and are embedded in its processes. The evolutionary pathway has been strongly *context-shaped* and its future track will be similarly contingent to these kinds of forces. We cannot be over-deterministic about futures from observations made within the box of the technologies and in ignorance about the political economic context.

Take the following comment from Tom Wheeler of the Brookings Institute:

“The internet started out with the hope of being the great democratizer by removing barriers to everything from the flow of news to local taxi service. While the networks of history had centralized economic activity, the distributed architecture of the internet would similarly distribute power away from central institutions. Unfortunately, that has not been the result. Companies utilize the distributed network to recentralize activity. Corporate digital autocrats collect personal information and exploit it to control markets. Political digital autocrats use the internet to spy on their citizens and target attacks on the democratic process”. (Who makes the rules in the new Gilded Age? Lessons from the industrial age inform the information age; Report. Tom Wheeler, December 12, 2018)

c. [Huge potential gains but “distresses” for some](#)

We must, of course, celebrate the many successes of the new technologies but we need a wider frame of reference if we are adequately to understand and respond to its potential future overall impact on jobs and lives. Carl Frey (2019) in his latest book *The Technology Trap* reminds us of the Luddite period of 19th Century history and suggests that; “*we are now living through another period of worker replacing technology*”. He reminds us that although there will undoubtedly be huge gains to be had in the long run; it will be cold comfort for those facing the short run “distresses” that have to be worked through. A key question for us now (just as it was then) is: *in whose interests is the digital transformation being (and going*

² A trend that is much easier to predict with a complex impact on labour markets is the ageing of populations. In Northern, Southern and Western Europe by 2030, the proportion of the population over 65 will rise to 55 percent - up from 47 percent in 2017 (*World Employment and Social Outlook – Trends, 2018*). The new technologies could assist by shifting the capital-labour ratio and by improving overall productivity. This might address generally rising dependency ratios. However, whether a smaller workforce due to ageing populations will balance the effect of job replacing technologies is hard to estimate. Older workers tend to be less adaptable and less mobile and may be unable easily to take up the new forms of work - adding a demographic component to job displacement. Labour shortages will also emerge for some segments of the economy as occupational transformation takes place and young people are more in demand.

to be) played out and with what short term disruptions?” This will tell us more about futures, as will estimates of what the new devices and systems are capable of doing.

Wheeler (2018) also points out that we have been here before. In the industrial age, those in control used labour as a component in the machine of production – attaching it to the new tools to raise productivity and to extract greater value (Allen, 2017). An obvious outcome of the process of the “intersection and interactions” came through the rapid growth of industrial towns and cities and their worker populations. We need to imagine just what sort of “spatial fix” (Harvey, 1981) will begin to emerge this time (we already have an obvious one in the rise of the “Smart Cities”).

3. A Fast Shifting Redistribution of Work and Opportunity

a. Deregulation, automation and entirely new marketplaces

Looking at the future for labour and skills, work opportunity and life chances from place to place, we should start by acknowledging that fundamental change has already overtaken us and in ways that we could not easily have predicted in advance³. The shape of competitive markets for labour is already transformed – first as globalisation worked its way into the system and then as the digital transformation played into this process to introduce new possibilities for capital/labour substitution and to open up whole new ways of performing work⁴. New jobs have been created - but generally *not for the same people and in the same places* where the greatest losses have occurred (Pike, Rodriguez-Pose, & Tomaney, 2008). Working together, these connected processes have combined to weaken the power of labour in all but the most elite and exclusive elements of the labour market (Although the first signs are appearing that Uber and Platform workers are beginning to organise to capture better conditions using the new media themselves to come together).

b. Intensification of workplace practices

To get anywhere near an understanding of the social and spatial outcomes of the transformation, we need to take *a more granular perspective* on the effects of the digital transformation on employment, jobs and wages. Things are changing very quickly in the daily work-lives of people. This is not clearly shown in the data series we have become used to as a measure of local economic development (as we continue to use historical metrics such as full-time employees in employment alongside an outdated Standard Industrial Classification - 2007).

The internal characteristics of a job *can shift dramatically* within an established “in employment” role that normal data simply count as a job unit. Workplace practices and conditions can now be changed in very short order and the scope and range of these changes

³ It is not just through the technologically enhanced productivity of labour (AI for example) that the digital transformation will have had its impact. It will be through the marketisation of *people's very identities* that the upcoming world of work will also be dramatically re-shaped (Zuboff, 2015). This is already having profound effects on the demand side of the labour market with global oligarchies at scale using deregulated and “automated” labour on a global platform.

⁴ The European Commission in a recent publication (*European Commission, The Future of Work: Today. Tomorrow. For All, 2019*) suggests that some 40 percent of EU workers are in “non-standard work” rather than on a permanent work contract.

is widening through the application of the new technologies. The core processes are not entirely new— just the *speed of penetration* with which they are being applied. Most are only visible at a very detailed level of analysis. Box 1 below presents a simplified glance from the past literature of the sorts of processes we are talking about. The key point is that they are being *powerfully intensified* by the digital transformation:

Box One; Trends Intensified

- *Increasing polarisation of skill requirements* (Hilton, 2008); (Autor, Levy, & Murnane, 2003);
- *Lean working* (Arfmann & Topolansky Barbe, 2014);
- *Increasingly precarious work* (Kalleberg, 2009);
- *The expansion of contingent work* (Katz & Krueger, 2016); (Kenner, Faro, & Kenner, 2017);
- *An earnings “squeeze”* (Clarke & Bangham, 2018);
- *Rising self-employment* (Tomlinson & Corlett, 2017);
- *Hollowing out of particular segments of the occupational hierarchy* (Mcintosh, 2013)
- *Extended automation involving job losses* (Wilkie et al, 2017)

Going forward, the literature agrees that AI and the associated complex of digital technologies are capable of redefining *the whole future of work* (Shestakofsky, 2017); (Grace, Salvatier, Dafoe, Zhang, & Evans, 2017). On the downside, few doubt – especially reading off from the list above - that this will lead to considerable job displacement with some places losing their economic base⁵. Experts differ but, at the macro level, overall net job losses of something between 15 and 50 percent are popularly talked about.

c. [Balancing the account: the shape of new work opportunities](#)

It is, however, important to keep a balance and to distinguish the short from the long term. The digital technologies do have the power not just to destroy large numbers of jobs but also to *create them*. The difficulty is - at the front of a wave of technological innovation - to know just what the upside will look like when it might be decades ahead. The European Commission in its examination on *AI; The Future of Work; Work of the Future* (EPSC, 2019) recommends a more positive view of the whole process:

“Rather than causing entire jobs to disappear, we think the new wave of automation will mostly affect specific tasks within jobs. The content of jobs will change and new tasks will be created as AI augments the human component, rather than destroying the job altogether - at least in the short term” (p36).

⁵ But there are dissenting views. Bentley (2018) writing an opinion piece for the European Parliament is sceptical in general terms about the future capabilities being ascribed to AI as a technology and sets out to debunk three common myths about where AI will go. In the case of what he calls “real AI” he makes it clear that what is likely to emerge is an enhanced ability to “scale up and add competency” to algorithmic procedures – downplaying some of the more fanciful notions of what an AI future holds

McKinsey (2017) also suggest that:

“New demand could be created for up to 80 million jobs in the trendline scenario and, in the event of accelerated investment, up to 200 million more in the step-up scenario. These jobs include architects, engineers, electricians, carpenters, and other skilled tradespeople, as well as construction workers. wind and solar; energy-efficiency technologies; and adaptation and mitigation of climate change may create new demand for workers in a range of occupations, including manufacturing, construction, and installation. These investments could create up to ten million new jobs in the trendline scenario and up to ten million additional jobs globally in the step-up scenario”

On top of this, they suggest that the marketisation of *“services that substitute for currently unpaid and primarily domestic work could create 50 million to 90 million jobs globally, mainly in occupations such as childcare, early-childhood education, cleaning, cooking, and gardening”*. Mc Kinsey see the new jobs as coming for the following groups:

- *Healthcare providers;*
- *Professionals such as engineers, scientists, accountants, and analysts;*
- *IT professionals and other technology specialists;*
- *Managers and executives, whose work cannot easily be replaced by machines;*
- *Educators, especially in emerging economies with young populations;*
- *“Creatives,” a small but growing category of artists, performers, and entertainers who will be in demand as rising incomes create more demand for leisure and recreation.*

4. The Growth of the Contingent Labour Market

a. The sectors most at risk to job shifts

What seems highly likely from the scenarios explored up to here is that there will be increased *polarisation* in labour market opportunity, both by occupation and place. High-end, well-paid jobs will be created more easily for those with the requisite and flexible skill sets. At the same time, other jobs will disappear and large numbers of low-wage, low-skill, low-attachment jobs will emerge⁶. As to where these job shifts will land sectorally, the greatest downside effects are anticipated to be in Finance and Logistics, and most especially in Retail where a significant impact on the nature of work and the extent and nature of jobs created is envisioned – especially for the near term, (Bostrom, 2017). The following offers a hint of what might be involved.

“Our estimates show that that 80% of jobs in transportation, warehousing, and logistics are susceptible to automation as a consequence of the trends we observe in technology. Retail is one industry in which employment is likely to vanish, but unlike manufacturing jobs which are highly concentrated, the downfall of retail employment will affect every city and region. U.S. companies employ 2 million

⁶ A graphic example of this can be seen in the move of “customer-facing” jobs in high streets to AI controlled warehouses, where “picking and placing” (increasingly by robots) displaces workers and to “algorithmically managed” home delivery services.

people just to do stock and order fulfilment work and over 90% of warehouse picking is currently done by hand. Migrating to automated picking gives productivity gains of 2x–3x that as compared to pick-to-conveyor operations and 5x–6x as compared to manual pick-to-pallet fulfilment centres⁷”. (CITI GPS, Technology at Work 3.0, p3)

b. More part-time, zero hours and short-term jobs colonising labour opportunity

Underlying these broad sectoral trends, there is a transformation in contract relations that is less visible but no less important. The evidence is that more and more “zero hours”, short-term and temporary contracts are appearing in the employment mix for people in work (Adams, Freedland, & Prassl, 2015). This has a bearing on the cessation of average wage growth that has been with us for some time. The labour market has already been primed into a form that makes it much easier to run with the new working conditions of a digitally transformed economy. Flexible forms of pay and reward have more generally replaced the more stable forms traditionally associated with the internal labour market of large enterprises⁸. Employers can now evolve entirely new configurations of jobs at every level in the organisation and change them more flexibly through their HR strategies.

Alongside the prospects for new job creation, what comes through strongly from the work cited in the European Commission Report (Bain 2018; Frey and Osborne 2017; OECD 2018; McKinsey 2017; Acemoglu and Restrepo 2017 and Breugel 2018) is that it will be support workers and production operatives, workers in occupations with low levels of education and skill and young cohorts with middle education that will experience the downside of the digital transformation.

More and more workers now find themselves in the *contingent labour market* (Katz & Krueger, 2016)⁹. This is set in a framework where corporate businesses unbundle themselves as employing units - outsourcing, sub-contracting and going global. More and more firms have become “distributed network entities”; controlling a variety of parts in their value chain and labour process across places and spaces – locally, nationally and internationally.

c. Watered down job and income multipliers

Following this general trend, there is a suggestion in a recent study from the UK (Lee & Clarke, 2019) that the job multiplier effects of new investment in the hi-tech sectors have

⁷ Automation is pivotal here. Automation is a process that does not just ‘do a job more productively than a human’, it disintermediates many of the ‘frustrations’ that employers experience when humans are ‘used to’ in their workplaces – no unions, no labour disputes, no salary supplements for unsocial hours working, no holiday and maternity leave, more flexibility to respond to demand etc. As a result, there is less need to engage with regulatory authorities.

⁸ A recent analysis by NEF shows that the proportion (relative to all workers) of zero-hour contract employees, self-employed workers and one-person micro-companies has grown by two fifths since before the financial crisis. And the corresponding lack of investment by firms now explains at least 25% of the UK’s gap in productivity with the historical trend (New Economics Foundation, 2019.) .

⁹ This label was first used by the US Bureau of Labour in the early 1980s to describe the way the attachment of people to jobs and of employers to their workers had begun to shift after the oil crisis of the mid-1970s. Put at its simplest, this involved the breaking down of traditional jobs to give way to part-time, short-term, low skill and low-attachment jobs of the classic internal labour markets of the major industrial enterprises. The arrival of the internet transformed its intensity.

taken on a different shape This study examines the labour market impact of high technology growth on the conditions for middle and low skilled workers using data for the period 2009-2015. It shows that, overall, high-tech growth does have a positive multiplier effect – generating 7 jobs in non-tradeable services for every 10 in the high-tech sector. What it also shows, however, is that 6 of these multiplier jobs go to *low skilled workers*. Employment rates for middle skilled workers do not increase but wages do. So, while new jobs do go to low skilled workers, the jobs are in poorly paid service work generating a fall in average wages for this group.

If substantiated more widely, this is an outcome of profound significance and one that chimes in with the argument here - that to see the real effects of the digital transformation on labour, it is vital to look beyond broad headcounts and traditional unit job multipliers. Even where there is hi-tech growth, those intensification processes described in the previous section can play themselves out to shift available jobs toward low pay, low attachment and low sustainability of tenure - even in favoured locations. (Appendices 1 and 2 from the RSA give some snapshot evidence for the speed of the transformation).

5. The Extension of Platform Work and the Gig Economy

a. Digital work and its evolving forms

Emerging from all this has come a wholly new re-shaping feature for employment – with the rise of a complex of elements variously called the *gig economy*, *the sharing economy*, *digital work*, *on-demand work and platform work*¹⁰. Difficult to define (and impossible adequately to explore here), this is characterised by being for the most part internet/cloud based; structured around short-term contracts or freelance work as opposed to permanent jobs; where relations between workers and employers are organised by algorithms and much work lies outside the stability and protection of a conventional ‘regular contract’.

Some jobs are expert and well-paid while the majority are low skill, low paid and precarious (Coyle, 2017). Flexibility and adaptability is the leitmotif (Spreitzer, Cameron, & Garrett, 2017). It is an employment vehicle ideally configured for “bump down” - where workers can slide or be shuffled down from a contractual situation of Standard Employment Relations (SER) to more precarious contract conditions. Paradoxically, however, it can also be a means, for those able to do it, to break the shackles of work bound to place and time by workplace rules and capture more freedom (Kuhn, 2016).

Figure 1 below, from the RSA, shows just how complex and pervasive this dimension of the labour market has become. The pyramid shape is suggestive of the balance of the good jobs and low-paid, low-skill ones.

¹⁰ At its core the gig economy is based on application driven platforms that dole out work in parcels – driving, delivering, cleaning are the most popular – where work is sourced and delivered over the internet/cloud. It is modern form of piece work – paid by piece delivered/order fulfilled. It can also apply more widely to any work contracted over the internet and carried out remotely. These labour platforms provide a matching service, linking demand for labour with its supply looking to lower transaction costs and addressing market failures.

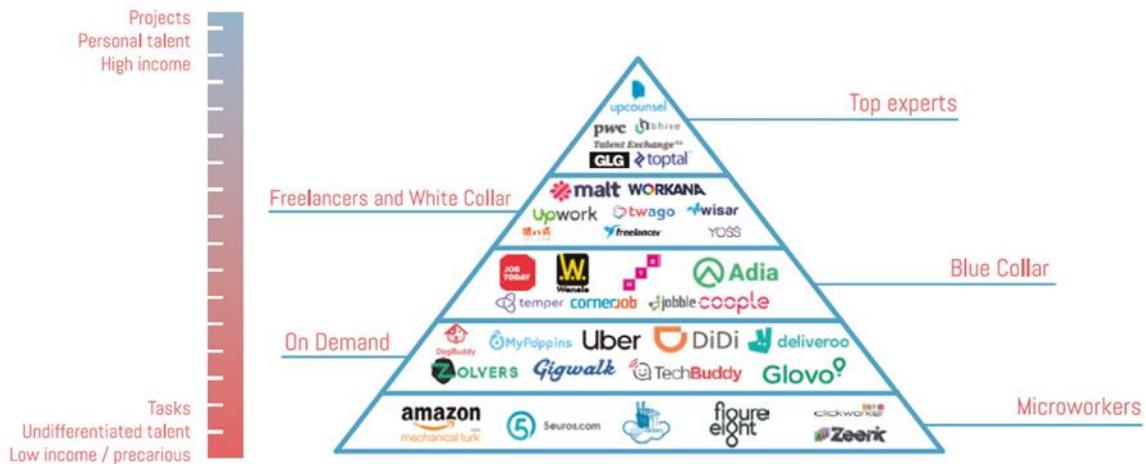


Figure 1; **Platform Labour and its Scope.**

Source: RSA (2019), *How can tech meet the needs of platform workers?*

c. Faster response times: contingency and more precarious work

With these new flexibilities, the labour market is much more responsive (contingent) to changes in the overall economy. Downswings see a faster response time - with labour much more easily laid-off and sub-contracts quickly adjusted to the new circumstances. Upswings can also be followed more flexibly - but probably at a rather slower rate. For workers in this segment of the economy, a sense of how rapidly their fortunes can be dramatically altered has become almost normal. Employees can find themselves invited to *shift their domestic contract status* with reference to competition coming from other parts of the world – often this can only be done by becoming temporary, accepting zero hours or going into self-employment.

The arrival of the internet and cloud technologies makes it possible for work to be performed almost anywhere. Work is no longer necessarily performed in factories or offices in a particular place since, logged on through the cloud, the added value of labour can be extracted anywhere across the distributed global network. But a key question again is: “what kind of work; under what conditions and for whom?” The platform work literature gives us some sense of the answer. As to “what kind?” van Doorn sees platforms as “*essentially new players in the temporary staffing industry, where software-driven management techniques serve to exacerbate the already precarious conditions of contingent workers in today’s low-income service economy*” (van Doorn, 2017). As to “for whom?”; he sees it as essentially part of the “*gendered and racialised*” history of service work where today’s algorithms serve to intensify “*established modes of exploitation and control*”. As to “where”; it is clear that “offshore” and “in developing countries” come up most strongly in any search for answers.

It may be against exploited micro-providers across the globe that workers in this segment of the UK labour market will have to compete for some of the “work as a service” jobs available to them (Oppenheim, Varshney, & Chee, 2011). Adding all this together, it seems clear that

employment is rendered more *precarious* for increased numbers of people. The class term – the *precariat* – living in poverty while in employment has been adopted to reflect this¹¹.

d. The scale and speed of the evolving trends

The sheer speed of growth for the broad set of processes just described has been highlighted recently in a study reported in the Guardian:

Britain's booming gig economy has more than doubled in size over the past three years and now accounts for 4.7 million workers, according to a report laying bare the increasingly precarious nature of employment. In a sign of the rapid shift in the modern jobs market as many as one in 10 working-age adults now work on gig economy platforms, up from one in 20 as recently as 2016, finds the study from the TUC and academics at the University of Hertfordshire. (The Guardian, 28th June 2019)

Offering another view on the scale of what it calls the “flexible, non-permanent work” phenomenon, the Freelancer & Contractor Services Association – the trade association for the professional employment services (umbrella, accountancy and payroll) industry - keeps an eye on the contingent labour market in the UK. Their *Insight Bulletin* for January 2016 offered the following as its window on the contingent labour market:

“Over 5 million singular individuals work on a flexible, non-permanent basis for UK plc. This includes 3.7 million self-employed without employees, and 1.7 million temporary employees. UK plc's use of flexible resources, as a proportion of its overall workforce, has risen significantly during recent years, and now stands at approximately 20%”.

e. Workers in work struggling financially

Overall it is estimated that currently around 7 million workers in the UK would fall into the set covered by non-standard employment relations – around one fifth and rising. Many of these jobs would be in some form of necessity-based, self-employment – sole traders working for themselves - boosting the numbers of small firms in the standard official statistics data series. Following through to earnings received for this kind of work – in employment and sole-trading - a recent RSA report points out (Wallace-Stephens, 2019) that:

“30 percent of workers don't feel like they earn enough to maintain a decent standard of living (up from 26 percent in 2017). Almost one in four workers sometimes have trouble meeting their basic living costs because of income volatility (24 percent, up from 19 percent in 2017). Moreover, a significant number of workers lack financial resilience – 36 percent would struggle to pay an unexpected bill of £100; 59% would

¹¹ Forbes in its Global Analysis (2015) in highlighting the rise of what it called the “temporary workers” phenomenon made the following arresting statement: “Mass hiring of temporary workers is not just a retail thing. It's happening everywhere – all classes of work from the executive suite to field labourers in every industry across the globe”. In a study of the US Workforce 2020 the following are estimates of the use of temporary workers by different sectors showing the penetration of this form of working. In all, 82% of Retail employers used temporary workers. The equivalent for Financial Services was 81%; Healthcare 81% and Public Service Agencies 86%. It is suggested that the total share of self-employed workers in the US economy may rise to as much as 40 percent by 2020.

struggle to pay an unexpected bill of £500. A further 45 percent don't expect to have enough in savings and pensions to maintain a decent living of living in retirement. While 32 percent are concerned about their levels of debt”

These conditions are experienced by those “lucky enough” to be in work and not just for the unemployed. In an increasingly de-socialised and privatised society, a widely experienced sense of anxiety about job prospects for the future is becoming normal - much in the same way that it did in the First Industrial Revolution – the concern is that, as then, it will follow through to the causes of political turbulence before a new social contract emerged¹²

6. Dominant Players in Control

a. Big Data and Oligopoly

The internet, the cloud, big data and AI represent the “carrier technologies” to produce a step jump in the labour transformation processes just described. Increasingly prominent in this is the Internet of Things (IoT)¹³. What they have also done - through the way “big data” has been captured, extracted and identified as an asset class for business – is to lay the ground for an unprecedented concentration of global economic power¹⁴. Corporately, the *GAFAM*: Google, Amazon, Facebook, Apple and Microsoft, and *BATX*: Baidu, Alibaba, Tencent and Xiaomi Groups have emerged as dominant global players.

What these players do is to operate at scale to extract value from the information people willingly disclose about themselves over the internet. Through the use of AI, they go on to achieve competitive advantage by being able to; “*to predict and modify human behaviour as a means to produce revenue and market control*”¹⁵. It is the value placed on these “big data” assets that places them at the apex of financial power at this stage of the Fourth Industrial Revolution. The dominant organisations also have a powerful role in using the new technology platforms to array themselves flexibly over space, time and activity to promote and exploit a new form in the modern *international division of labour*. For a full understanding of a shift that can rightly claim the status of a “revolution” see the seminal work of Shoshana Zuboff in her book; *The Age of Surveillance Capital* (Zuboff, 2019).

¹² Leading at that time to the emergence of the trades unions and later from an organic base to the Labour Party (Niven, 2019).

¹³ The IoT is primarily about machines talking to machines over the internet and letting them talk to us, to applications and to other third parties. At the level of the devices involved, the possibilities are endless. It is the material vector (audio or air quality sensor, phone, smart tv, car diagnostic monitor, surveillance camera) that can capture and transmit to an internet-based network, cloud or platform directly useable intelligence about you as an individual and your social networks plus ‘data exhaust’ - metadata that can place and map behaviour.

¹⁴ Wikipedia offers the following view of what the term big data implies: “*Current usage of the term "big data" tends to refer to the use of [predictive analytics](#), [user behaviour analytics](#), or certain other advanced data analytics methods that extract value from data, and seldom to a particular size of data set*”.

¹⁵ Zuboff (2015, p76) takes the view that “big data” is misplaced by being thought of only as a technological concept and argues that: “*it is not a technology or an inevitable technology effect. It is not an autonomous process ..., It originates in the social, and it is there that we must find it and know it*. Going on to say that: ‘big data’ is above all the foundational component in a deeply intentional and highly consequential new logic of accumulation that I call surveillance capitalism. This new form of information capitalism aims to predict and modify human behaviour as a means to produce revenue and market control”. From this base she sees “Surveillance Capitalism” as having the power to challenge democratic norms

Once again recalling the past: Tom Wheeler (2018, p4) captures a more poetic sense of where we are:

“Today we live in the new Gilded Age: technology-driven innovations have again improved daily life while creating great wealth, inequality of circumstances, non-competitive markets, and viral deceit” and “the rules that governed the application of the new technology were made (in the late 19th Century) by a handful of industrial barons for their own benefit. The rules in the early internet era —the new Gilded Age—are being made similarly; this time by information barons”

The question we want finally to address is not just in what context - sectorally and occupationally - these positive and negative changes will play out, but *where geographically*, and on whose *locally lived* lives. Geography matters in most liberal democracies not least because space is “cookie-cut” into administrative and electoral geographies and what happens within electoral geographies can significantly impact political matters. Brexit is a classic example.

7. Bringing in the Geography: Place to Place Differences in Outcomes

b. Transformed working conditions by place

What then of the current and future impact of the digital transformation on the *spatial pattern* of work and employment conditions that was raised in the introduction? Noted in earlier sections were some widely quoted macro-estimates of the upside and downside effects on jobs of the new technological wave. Looking at the shape of labour and work contracting, we could also see the growth of non-standard employment relations and the rise of the gig economy and platform work. We could see the shift toward internet shopping and with it the convenience of home delivery. We could see the emergence of a new version of the international division of labour with the platforms and micro-working. The “place” question is this; *where will these impacts play themselves out and what prospects can today's less-favoured places expect to have - going forward?* This is not just a geographer's fixation. In a democratic society peoples' votes – conditioned by what they see around them locally as well as nationally have the power - for good or ill – to change futures.

The following might be seen as warning;

“...the rise of populism in the developed world is fuelled by political resentment (Cramer, 2016) and has a distinct geography. Populist votes have been heavily concentrated in territories that have suffered long-term declines and reflect and increasing urban/regional divide” (McCann, 2016).

A recent report by McKinsey points out starkly that “*America is a mosaic of local economies on diverging trajectories*”. This is in a polarising labour market at a time when mobility is at a historic low (McKinsey and Company, 2019)¹⁶. It is significant that McKinsey should have chosen to highlight the dangers of an emerging *spatial mosaic* of economic and social

¹⁶ Speculating on why inter-regional job mobility has fallen so sharply, Gillian Tett suggests that key factors may be an ageing population, high rates of home ownership, the cost of living in the cities and – significantly perhaps - a growing cultural divide that makes people reluctant to leave their home communities

divergence on the impact of automation as the focus of its second major report on the Future of Work in the US.

c. Concentrations of the downside: The “places that don’t matter”

Following the “mosaic” theme and reading off from the trends described in previous sections, it would not be too difficult to imagine a wide span of local labour settings where some or all of the following conditions currently prevail:

- Job losses arising from automation;
- The negative effects of internet shopping on the retail sector;
- Increasing difficulty in finding higher skilled workers to fill some jobs;
- More of the available jobs being colonised by precarious and contingent work;
- Local service wages being squeezed from lack of consumer demand and public sector austerity;
- New investment creating job opportunity that has low job multipliers and a low propensity for stable employment;
- Low propensities for people to move to seek work.

While “whole job” counts from Standard Employment Data may not be seen as changing very much, *the lives of workers and families are indeed undergoing significant transformation*. Rodriguez-Pose (2018) identifies these as features for the “*places that don’t matter*” of his argument - but explored chiefly through the context of a discussion framed around the negative externalities that arise from urban agglomeration. This may be so, but the argument here is that – with or without the agglomeration thesis – there is a causal process within the *sphere of work* leading to what he calls “*social and economic, real or perceived distress*”. The territorial dimension comes less, perhaps, from some sense of feeling left behind - in the sense that other places are seen to do better - but more from a place-informed sense that for our city, town or locality life-chances are being *negatively shaped by forces that we cannot control*.

Taking a view that people should respond (as historically they have) by moving to locations with better prospects – the major cities - ignores what we know of the profound impact of differential housing and living costs. On top of this, if the driving force of the labour transformation is being played out across the labour market as a whole; what price moving to another low skill, low wage, insecure job in a more expensive location? The opportunities to capture such jobs in a major city location would certainly be greater, along with the general scale of possibilities more widely but, where wage levels are flat or declining in real terms mobility would be highly selective. Living costs against wage expectations would rule out relocation as an option for many whose jobs are under threat in the new context.

From this perspective, the idea of places that “*do not matter*” has a much wider frame of reference. What we are seeing through maps of the feature are degrees of spatial concentration of widespread disruption and distress – islands and pockets poking through to become exposed as the tide of *quality job opportunity* runs out and, with it, people’s confidence for the future.

d. Labour market and place transformation in the downside areas

Imagine the geographical distribution of where these people might be who see little prospect for a sustainable job with decent wages for themselves or their family. People living in old industrial regions, cities of lower order in the urban hierarchy and small towns and rural areas are more sharply at risk to the downside effects of the digital transformation on the labour market (particularly in those traditionally widely geographically dispersed retail, service and warehouse logistics sectors). Places that already have a history of unemployment and deprivation are likely to have *much less resilience* to cope with further increases in the scale of job insecurity and indebtedness that the RSA Report quoted earlier sees as widespread. As Chakraborty in a recent Guardian op ed puts it:

“Public parks are disappearing. Playgrounds are being sold off. High streets are fast turning to desert. These trends are national, but their greatest force is felt in the poorest towns and suburbs, the most remote parts of the countryside, where there isn’t the footfall to lure in the businesses or household wealth to save the local boozier” (The Guardian 14th August 2019).

Businesses and jobs in the local shopping street and service trades of these places are responding to the pressures of flat wages, indebtedness and job insecurity as the conditions for key segments of labour have shifted. Add to this a decade of UK government-imposed austerity on the Local Authorities and Public Services generally and the roots of what Chakraborty is describing become clear. Even where there is hope that, as in the past, some up-cycle in the economy might restore things, the multiplier effect on jobs and incomes might well be lower under the new contractual conditions for labour.

In trying to see what is happening to the *“places that don’t matter”* it is not sufficient to cast the debate only in terms of urban economics - though it undoubtedly has a role. At the heart of what is going on is a major shift in how capitalist firms operate and how they interact with the rest of the economy under what is a *deep transformation of the labour market* (Srnicek, 2019).

e. The upside places; another world

By contrast, for those favoured places with economic dynamism and able to benefit from agglomeration economies, conditions are very different – good prospects for those with the right skills. The most recent window on this phenomenon comes from the United States (McKinsey and Company, 2019). Here, 25 megacities and high-growth hubs and their peripheries, are projected to account for about 60 percent of net job growth by 2030 -, although they have just 44 percent of the population. (But even these thriving cities, the Report says, will “need to connect marginalized populations with better opportunities”) Added to them are “niche cities” and “small powerhouses” fuelled in many cases by technology businesses. The McKinsey Report also identifies Silver Cities (for the retired). College-Centric Towns are also seen as beneficiaries of employment growth that may see 11 percent employment growth over the next decade and that can build on their well-educated talent pools.

For the UK there is no equivalent study by geographical unit to match that from McKinsey for 2030. The dominance of London as the locus for much of the positive job and

occupational growth associated with the digital transformation seems assured. Oxford, Cambridge and Reading figure among the equivalent niche-powerhouses alongside the other College-Centric cities. For regions outside the South East, there is a large literature showing that the North already has significant problems on the downside but also some features of the upside in cities like Manchester and Leeds. In general terms, however, the prospects for the North are of a different order from London and its outer South East periphery. There is a policy-driven attempt to work on this situation through the idea of the *Northern Powerhouse* cluster - from Liverpool through Manchester to Leeds and Hull – with a strong recognition that high-skill, high-wage jobs and enhanced innovation and creativity is a way to offset the weight of the downside pressures for the region as a whole.

It is in the upside places that the more optimistic scenarios for new jobs and new kinds of jobs will emerge as an early outcome of the digital transformation. Here, then, the more familiar pathways for growth and change will play out. There will be continuing skill shortages for the most skilled and most qualified people that all the forecasting scenarios see as the prime beneficiaries and drivers of change. Small businesses and start-ups will emerge strongly and need fostering. Many of them will be innovative and the spread of activity will be wide. In addition, the demand for that set of workers that McKinsey describes as “*services that substitute for currently unpaid and primarily domestic work*” will be considerable in a marketplace where household incomes will be sufficient to pay for them.

There will also be wide scope for the “*creatives, ... who will be in demand as rising incomes create more demand for leisure and recreation*”. This helps very clearly to make the point that – for the moment at least – the labour market upside of the digital transformation looks to be a *major city, niche-powerhouse and College-Centric place cluster phenomenon*. Factoring in this geographical perspective means that national scale, sector-driven forecasts of the Future of Work need to be parsed into two distinctive sets – those places that will be expected to benefit massively and those that will “*not matter*”¹⁷.

f. Splintered yet connected economic spaces

A great deal of what has been written about the digital transformation and the future of work is inevitably speculative - just as it would have been had we been looking forward for the beginning of the machine age in the 19th Century. The things we seem to be clearer about are that, as with the earlier transformation, *polarisation and inequality seem built into the structure of outcomes*. What we have now, however, is what Malecki, & Moriset (2007) called a “splintered yet connected economic space” where the internet makes it even more possible for sophisticated business users make use of a fine-grained division of labour to take advantage of high skills in some places and low wages in others. For the moment, the geographical take is that large cities with their connectedness, scale and cultural density are in the clear ascendancy while spaces outside the cities and especially in older industrial regions lag behind.

¹⁷ Of course, the areas of concentrated growth will also face the dis-economies that come from agglomeration. The cities, in the cliché of our time, will need to get “smarter”. Spill-over effects will have a role to play in relieving the pressure and decentralising tendencies may see some of the growth arise at locations out of the main hubs.

The focus of this paper has been on those sorts of places where the downside effects of the transformation are already spatially concentrated and that will lack “*the momentum to offset automation-related displacement*”. What it has sought to do is to explore how, both now and certainly for the future, work is becoming made more flexible through the carrier technologies of the digital transformation, and how that process is contributing to both a shift in the character of both employment and income multipliers from business investment (Lee & Clarke, 2019).

The digital platform economy offers the capability to strip away those long-standing protections and incentives that have allowed employees to sustain improved wages and employment rights (Berg, Furrer, Harmon, Rani, & Silberman, 2018). It delivers considerable cost efficiencies and competitive advantage to businesses, enabling small numbers of them to build strong market positions in key service sectors. The question for policy is what can be done to reap the maximum benefits of the Fourth Industrial Revolution while at the same time preserving the principles of justice and fairness in the allocation of those benefits across the population at large. It is to this we now turn.

8. Policy: Taking a More Informed and Realistic View

a. Measures to ensure decent work and rewards

From a policy perspective, much of the distress described earlier in the paper - both in general and especially for the “*cold places*” (Will Hutton’s label for the places that don’t matter) is coming from what was described earlier - following (Srnicsek, 2019) - as “*deep transformations in the labour market*”. Labour standards that have been built up over the last century are being challenged as employee jobs have been fragmented into short term tasks both inside the workplace and across a “connected but splintered” space economy. Safety nets have come under pressure and Taylorism is being re-introduced in new forms facilitated by the digital transformation. Active steps are required to reinstate a culture of “decent work” and fair rewards before the dangers of inaction generate consequences in the political sphere (Berg et al., 2018).

To confront this, the ILO suggests that governments, employers, and workers organizations need to come together to reinvigorate the social contract that gives working people a just share of economic progress, (International Labour Office (ILO), 2016). This would involve “*respect for workers’ rights and protection against risk in return for their continuing contribution to the economy*”. A human-centred agenda for the future of work is needed that would strengthen the social contract by placing people and the work they do at the centre of economic and social policy and business practice¹⁸.

¹⁸ This is more than a grand ideal. California has, for example, moved to legislate for workers in the gig economy to be given proper employment rights. New Zealand and Australia have begun to look at sector deals with a focus on low pay to improve wages, training and worker rights (See Gavin Kelly, *Financial Times*, October 27, 2019)

b. Building and developing skills for future work

The obvious approach to employment under the Fourth Industrial Revolution is to build new skills into the population at large and to make provision for people to transition to new work roles¹⁹. Where this is difficult, however, is with the questions; “what sort of skills, in whose interests, and how can those who acquire them have some prospect for progression and decent wages?” Platform work offers little scope for progression and, for those places where low quality low-wage and dependent jobs are dominant, meeting employer demands offers little scope for skills development in the private sector. As has been shown above, many of these jobs face further negative prospects going forward (Centre for Cities, 2018).

Policy needs to step out of the fixation that *meeting local labour market need is the prime requirement*. It is, of course, important that this be done but, in some contexts, it runs the risk of perpetuating a “low-level equilibrium trap” where, while numbers of jobs may hold up; wages, conditions and skill needs are driven down²⁰. The issue is not just one for workers. Raising the quality of jobs is equally critical for employers. A drive for decent work and rewards must go hand-in-hand with policy for skills development and enhanced productivity. There is considerable scope for local action that brings all the stakeholders together around a *broader learning and skills agenda*.

c. A wider view of skills

Looking forward, the debate about skills needs to move from the specific – “the engineers domain”, to the general, so-called “soft skills” domain and education should be regarded as the new “gold standard”. Hybrid skills are going to be at a premium – bringing together AI, Machine Learning and Human Intelligence is the necessary way to go for a world where Microsoft suggests that; “65 percent of students today will be doing jobs that currently do not exist”. This demands that we must do more to use the new technologies to teach differently. This is about more than STEM. Widely defined *communication skills* – in a rapidly changing information and communication world – are vital alongside enhanced abilities to work with others and in groups²¹.

The skills people have - or should be able realistically to aspire to – need to be those that have some meaning beyond the hope of a pay cheque in a local context where jobs are poor quality and wages are low. For future jobs under the digital transformation, a workforce ready to step up is essential. Now - in the challenging short term – is the time to raise the game.

¹⁹ *The World Economic Forum Paper – “Towards a Reskilling Revolution: A Future of Jobs for All”* suggests breaking down jobs into a series of relevant, measurable, component parts in order to then systematically compare them and identify any gaps in knowledge, skills and experience. They use this to look at how “transitioning out of a particular job will be able to bring those capacities into any new roles. The idea has a complex matching methodology to support it identifies 958 types of jobs arrayed across a “job fit” matrix to produce “job zones” as clusters of cognate, transferable skills as a way of “maximizing productive re-deployment opportunities for workers”.

²⁰ The OECD already points us to places suffering from the “low skills equilibrium” (Froy, Giguère, Meghnagi, & Arzeni, 2012) where these conditions already prevail.

²¹ Gaming has emerged as a powerful means to support skill building for wider behavioural skills. People need to be put in a *convivial space to come together and learn together* to make a difference. Teachers need to be provided with the tools to add gaming and group communication skills to the curriculum. (Minecraft is an early exemplar of what can be achieved and enthusiastically adopted by young people as a game and learning tool)

While this is a matter for State education and training policy generally, the thrust of this paper is that *much more could be done locally*. The needs of local employers should be met but there needs to be a mission outside the “business led” agenda to raise skills, confidence and aspirations in the workforce²².

d. The foundational economy as a platform

The competitive context in the private traded sectors inevitably sets limits on the training resources available to private businesses. Notwithstanding this limitation, there is a component of every local labour market that need not be so narrowly constrained by limited consumer disposable incomes and tight markets. Geographically widespread employment opportunity is also available directly across the *public and third sectors* and for *publicly procured private provision* for the goods and services local communities need. In a policy turn capturing growing interest, CRESR (2013) in what it calls the *Foundational Economy*, (Bentham J, et, 2013) shows how significant democratic choice can be exercised in relation to local jobs and the sort of quality standards we have been talking about. Take the following in their *Manifesto*:

“... This new category, the foundational economy, which employs 40% of the workforce and is both private and public, is the sector of the economy that provides goods and services taken for granted by all members of the population and is therefore territorially distributed. At the same time. it depends on a kind of ‘social franchise’, either because it is directly or de-facto franchised by the state, or because household spending and tax revenue sustains its activities which are therefore sheltered. This re-conceptualisation justifies a new kind of political intervention which would challenge public and private business models that privilege the point value of least cost and most profit and neglect the preconditions of national, regional and local economic security and social sustainability”.

This follows the thrust of this paper in a number of senses. First, and in relation to the technologies we have been discussing, it emphasises democratic and political choices over techno-determinism. Second, it makes the clear point that there are vast numbers of widely distributed job opportunities that tend to be ignored in the sectoral macro-models that dominate the grand work futures debates. Third, it decouples the sobriquet “don’t matter” from a one-way logic of GDP and competitive advantage in a commercial marketplace and recognises that places can choose to order life and work differently for a significant number of their citizens. What can be added from the perspective set out here is that the foundational economy can provide an experimental locus for *modern forms of work and skill* built around

²² The standard England and Wales approach to policy intervention for employment and skills leaves only limited scope for the local perspective. Policy (as well as data) is generally designed to work from top down: National policy preferences (national curriculum, STEM, PISA-following, supply side skills measures, apprenticeships); Sector focus (sector skills councils, sector employment forecasting) and cascaded funds and prescribed measures downwards (college and school funding streams, LEP skills priorities etc). The local input is prescribed as being primarily business-led - attached to skills shortages and future needs as the existing cohort of private sector enterprises sees it. Intervention will need to be much more refined and genuinely bottom up-informed if we are to avoid places and their people suffering alienation and the political consequences that arise from it.

principles of co-creation and co-production (skill sets that are also much in vogue in HR debates in the commercial traded sectors). No one would doubt that making such an ambitious agenda a practical project under today's conditions would be a challenge but there are some early signs of adoption on behalf of the Welsh government (Bevan Foundation, 2017) (Welsh Government, 2019).

e. The vital importance of lifelong learning

Gloomy scenarios for the future of jobs, work and employment should not, then, stand in the way of policy interventions to develop high level skills. Opportunity should be provided to give people generally the chance to defeat doom-mongers' views of their prospects for work. This demands more effort to expand the wider capabilities and capacities of all the people to make something of their lives (regardless of the job or caring role they currently occupy). The more challenging the future - not just of work but of good living - the more important it is that from early years to adulthood, people should be encouraged and helped to acquire and continue to acquire more education, skills and competencies. *Lifelong learning is essential* not just as a slogan but as a practical policy mission. The McKinsey Report gives this strong emphasis as a policy recommendation for the US:

“The old model of front-loading education early in life needs to give way to lifelong learning. Training and education can no longer end when workers are in their twenties and carry them through the decades”(McKinsey and Company, 2019)

Workers will need continuous support to navigate the fast-changing future labour market. Going forward, we clearly need a new kind of supportive infrastructure *with a significant degree of local sensitivity* that enables workers generally to have some confidence in their future economic circumstances.

Taking this wider view of skill and “work readiness” must also impact on attitudes for access to welfare benefits (*Rethinking the safety net for 21st century workers - RSA, 2019*). Training those out of work to access the sort of jobs and work that the least favoured places have at present and will most likely have in the future (contingent, dependent, low wage, low skill, low sustainability) makes less sense than ever (and punishing them for failure is scandalous)²³ A policy for lifelong learning and human centred skills development is required that is an *end in itself*. In work, out of work, aspiring to work, finished with work – all should all be participants in the drive for personal and social betterment in the search for the Good Society.

²³ Responses to what has just been said about the risks to democracy and society that come from having large portions of society suffering alienation and exclusion and being cut off from the world of work, are being framed in some quarters. The idea of Universal Basic Income (UBI) is being increasingly widely promoted – major experiments in Norway and Finland and being piloted in Scotland). This is a form of unconditional income offered to every citizen as a component of social security as part of a welfare regime. Significantly for us here, payment does not require the recipient to work or look for work and is independent of any other income.

9. Conclusions

a. Challenging some rooted assumptions of policy practice

In the face of the digital transformation, there are some serious questions to be asked about all those policies that try to second-guess (or analytically estimate) the direction of travel of labour markets at national, regional or local level²⁴. It is entirely sensible to plan for growth in the upside areas and to work to facilitate it and to have policy work to mediate its negative externalities. But for the downside places, the assumption that policy intervention should continue to be based primarily on the traditions of place marketing, inward investment and “trickle down” needs a radical re-thinking. In the short term, if not the long, and against “a mosaic of local economies on diverging trajectories”, the traction of new investment on the scale and quality of jobs already looks open to serious question. Working on the assumption that people can make their private choices to move in search of opportunity and that it is to the cities that we should look (while dismantling more localised interventions) looks more an ideological policy proposition than a practical one.

b. Breaking out: Re-imagining education and training to meet the new world

There will undoubtedly be more jobs and more quality jobs available as the digital transformation evolves. But if the current trend towards job polarisation continues and short-term disruptions are adding to “social and economic, real or perceived distress” the rise of radical political movements might force us to think differently about the ways we see people in relation to jobs, work and employment. Turning things round would require being more creative about what each of these things – job, work, employment - might have the capacity to mean in different (especially local) contexts. Are they really the only touchstone to deliver us our personal and social identity and our means of existence in every context (Krippendorff, 2004) or can we begin in the context of the change that we know confronts us, to think about ascribing to them a different set of values and purposes?

Imagine, for example, that “*human-centred*”, “*foundational*”; “*environmentally sustainable*” and “*socially empathic*” were the key design principles for education and skills training. Imagine that they were given the same order of importance in driving the system as being “*business-led*” has been since the Thatcher-Reagan era. We would be looking at work and employment from a very different philosophical starting point. The evidence is that things are being turned upside down by forces about which we seem to have only partial understanding – let alone control. Why not try a little “turning upside down” on behalf of society at large – beginning from principles like human dignity, freedom, democracy, equality, the rule of law and respect for citizen rights? Why not consider the digital transformation as a golden opportunity to design a human-centred future as well as an engine for personal and corporate wealth creation? Changing the context for the debate would be a vital first step.

Peter Lloyd

14th December 2019

²⁴ For example, policy that allocates land use through planning and that seeks to prioritise investment in logistics parks or call centre office developments needs to understand the job effects of the transformation. Local plans for housing land allocation that require job growth estimates for the next 15 years need to take into account what is going on in job futures.

BIBLIOGRAPHY

- Adams, A., Freedland, M. R., & Prassl, J. (2015, February 1). The “Zero-Hours Contract”: Regulating Casual Work, or Legitimizing Precarity? Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2507693
- Allen, R. C. (2017). Lessons from history for the future of work. *Nature*, 550(7676). Retrieved from <https://www.nature.com/news/lessons-from-history-for-the-future-of-work-1.22825>
- Arfmann, D., & Topolansky Barbe, G. (2014). The Value of Lean in the Service Sector: A Critique of Theory & Practice. *International Journal of Business and Social Science*, 5(2). Retrieved from http://ijbssnet.com/journals/Vol_5_No_2_February_2014/3.pdf
- Autor, D. H., Levy, F., & Murnane, R. J. (2003). The Skill Content of Recent Technological Change: An Empirical Exploration. *The Quarterly Journal of Economics*, 118(4), 1279–1333. <https://doi.org/10.1162/003355303322552801>
- Bentham J, et, al. (2013). MANIFESTO FOR THE FOUNDATIONAL ECONOMY. *CRESC WORKING PAPER NO. 131*. Retrieved from <https://foundationaleconomycom.files.wordpress.com/2017/01/wp131.pdf>
- Berg, J. M., Furrer, M., Harmon, E., Rani, U., & Silberman, M. S. (2018). Digital labour platforms and the future of work: Towards decent work in the online world, 1–158. Retrieved from <https://www.mendeley.com/catalogue/digital-labour-platforms-future-work-towards-decent-work-online-world/>
- Bevan Foundation. (2017). Wales’ Foundational Economy: why it’s time for action | Bevan Foundation. Retrieved October 11, 2019, from https://www.bevanfoundation.org/commentary/wales_foundational_economy/
- Bostrom, N. et al. (2017). Policy Desiderata in the Development of Superintelligent AI 1. Cities, C. for. (2018). The State of Urban Britain. *Cities Outlook*. Retrieved from https://www.mendeley.com/research-papers/state-urban-britain/?utm_source=desktop&utm_medium=1.17.13&utm_campaign=open_catalog&userDocumentId=%7B2302d50e-d244-3683-b85a-09b8bff87424%7D
- Clarke, S., & Bangham, G. (2018). Counting the hours. Retrieved from <http://www.resolutionfoundation.org/app/uploads/2018/01/Counting-the-hours.pdf>
- Coyle, D. (2017). Precarious and Productive Work in the Digital Economy. *National Institute Economic Review*, 240(1). <https://doi.org/10.1177/002795011724000110>
- EPSC. (2019). *The Future of Work: Work of the Future*.
- Fix productivity crisis by giving workers more paid holiday and higher wages | New Economics Foundation. (n.d.). Retrieved from <https://neweconomics.org/2019/08/fix-productivity-crisis-by-giving-workers-more-paid-holiday-and-higher-wages>
- Frey, C. B. (2019). *The technology trap : capital, labor, and power in the age of automation*. Princeton University Press. Retrieved from <https://press.princeton.edu/titles/13489.html>
- Froy, F., Giguère, S., Meghnagi, M., & Arzeni, S. (2012). Skills for Competitiveness. Retrieved from [http://www.oecd.org/cfe/leed/skills for competitiveness synthesis final.pdf](http://www.oecd.org/cfe/leed/skills%20for%20competitiveness%20synthesis%20final.pdf)
- Grace, K., Salvatier, J., Dafoe, A., Zhang, B., & Evans, O. (2017). When Will AI Exceed Human Performance? Evidence from AI Experts. Retrieved from <http://arxiv.org/abs/1705.08807>
- Harvey, D. (1981). THE SPATIAL FIX - HEGEL, VON THUNEN, AND MARX. *Antipode*,

- 13(3), 1–12. <https://doi.org/10.1111/j.1467-8330.1981.tb00312.x>
- Hilton, M. (2008). Skills for work in the 21st century: What does the research tell us? *Academy of Management Perspectives*, 22(4), 63–78. <https://doi.org/10.5465/AMP.2008.35590354>
- International Labour Office (ILO). (2016). *Non-standard employment around the world: Understanding challenges, shaping prospects*. Retrieved from www.ifrro.org
- Kalleberg, A. L. (2009). Precarious Work, Insecure Workers: Employment Relations in Transition. *American Sociological Review*, 74(1), 1–22. <https://doi.org/10.1177/000312240907400101>
- Katz, L. F., & Krueger, A. B. (2016). The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015. Retrieved from https://krueger.princeton.edu/sites/default/files/akrueger/files/katz_krueger_cws_-_march_29_20165.pdf
- Kenner, J., Faro, A. Lo, & Kenner, J. (2017). Core and Contingent Work in the European Union, 315. Retrieved from <http://eprints.nottingham.ac.uk/40196/>
- Krippendorff, K. (2004). Intrinsic Motivation and Human-Centered Design. *Theoretical Issues in Ergonomic Science*, 5(1), 43–72. <https://doi.org/10.1080/1463922031000086717>
- Kuhn, K. M. (2016). The Rise of the “Gig Economy” and Implications for Understanding Work and Workers. *Industrial and Organizational Psychology*, 9(1), 157–162. <https://doi.org/10.1017/iop.2015.129>
- Lee, N., & Clarke, S. (2019). Do low-skilled workers gain from high-tech employment growth? High-technology multipliers, employment and wages in Britain. *Research Policy*, 48(9), 103803. <https://doi.org/10.1016/j.respol.2019.05.012>
- Malecki, E. J., Moriset, B., & Moriset, B. (2007). *The Digital Economy*. Routledge. <https://doi.org/10.4324/9780203933633>
- Massey, D. (1995). *Spatial divisions of labour: social structures and the geography of production*. Retrieved from https://books.google.com/books?hl=en&lr=&id=GEtdDwAAQBAJ&oi=fnd&pg=PR10&ots=_nBUQWIKe_&sig=T5rFFS19kQIA3XMsQaqYpQfALiA
- Mcintosh, S. (2013). Hollowing out and the future of the labour market. Retrieved from www.gov.uk/bis
- McKinsey and Company. (2019). Future of work in America | McKinsey. Retrieved September 10, 2019, from <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-in-america-people-and-places-today-and-tomorrow>
- Niven, A. (n.d.). Has Labour Lost the North? *Tribune Magazine*. Retrieved from <https://tribunemag.co.uk/2019/07/has-labour-lost-the-north/>
- Oppenheim, D. V., Varshney, L. R., & Chee, Y.-M. (2011). Work as a Service (pp. 669–678). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-25535-9_54
- Pike, A., Rodriguez-Pose, A., & Tomaney, J. (2008). Local and Regional Development. *Economic Geography*, 84(2), 241–242. <https://doi.org/10.1111/j.1944-8287.2008.tb00407.x>
- Rethinking the safety net for 21st century workers - RSA*. (n.d.). Retrieved from <https://www.thersa.org/discover/publications-and-articles/rsa-blogs/2019/08/economic-safety-net>
- Rodríguez-Pose, A. (2018). The revenge of the places that don’t matter (and what to do about it). *Cambridge Journal of Regions, Economy and Society, Online*. Retrieved from <https://doi-org.ezphost.dur.ac.uk/10.1093/cjres/rsx024>
- Shestakofsky, B. (2017). Working Algorithms: Software Automation and the Future of Work. *Work and Occupations*, 44(4), 376–423. <https://doi.org/10.1177/0730888417726119>

- Spreitzer, G. M., Cameron, L., & Garrett, L. (2017). Alternative Work Arrangements: Two Images of the New World of Work. *Annual Review of Organizational Psychology and Organizational Behavior*, 4(1), 473–499. <https://doi.org/10.1146/annurev-orgpsych-032516-113332>
- Srnicek, N. (2019). Platform Capitalism (excerpts). *Journal of Economic Sociology*, 20(1), 72–82. <https://doi.org/10.17323/1726-3247-2019-1-72-82>
- Tomlinson, D., & Corlett, A. (2017). A tough gig? Retrieved from <http://www.resolutionfoundation.org/app/uploads/2017/02/Self-employment-presentation.pdf>
- van Doorn, N. (2017). Platform labor: on the gendered and racialized exploitation of low-income service work in the ‘on-demand’ economy. *Information, Communication & Society*, 20(6), 898–914. <https://doi.org/10.1080/1369118X.2017.1294194>
- Wallace-Stephens, F. (2019). *The case for a 21st century safety net Economic Insecurity*: Retrieved from <https://www.thersa.org/globalassets/pdfs/reports/economic-insecurity-21st-century-safety-net-report.pdf>
- Welsh Government. (2019). The foundational economy | GOV.WALES. Retrieved October 11, 2019, from <https://gov.wales/foundational-economy>
- Wilkie, M., Frey, C. B., Coulter, N., Homan, D. F., May, M., McDonald, G., ... Mcshane, K. (2017). Citi GPS: Global Perspectives and Solutions. Retrieved from https://www.oxfordmartin.ox.ac.uk/downloads/CITI_REPORT_ADR0N.pdf
- Zuboff, S. (2015). Big other: Surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology*, 30(1), 75–89. <https://doi.org/10.1057/jit.2015.5>
- Zuboff, S. (2019). *The Age of Surveillance Capitalism* - Profile Books. Retrieved February 3, 2019, from <https://profilebooks.com/surveillance>

APPENDIX 1

Part-time work among men steadily creeping into bottom end of labour market



Prevalence of part-time work among men aged 25-55, by hourly wage level



Notes: Sample is men aged 25 to 55 in Great Britain who are employees in their main job. Part-time work defined as working less than 30 hours per week.

Appendix 2: The Rise of Non-Standard Employment Contracts

Figure 1: Changes in self-employment and non-standard contracts since 1992 (RSA analysis of Labour Force Survey)

