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ORIGINAL ARTICLE

Labour/data justice: a new framework for labour/regulatory datafication

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Abstract

Labour datafication – the accelerating quantification of working life, encompassing data use that extracts additional value from workers – is increasingly recognized as a dimension of the future of work. This article proposes a notion of 'labour/data justice' to capture both the deterioration of working life at the labour/data nexus and datafied strategies for effective regulation. We examine 'labour/regulatory datafication', focusing on conduits to unacceptable work, and argue that data justice scholarship provides interlinked contributions that are vital to a labour/data justice framework. We identify key components of this framework: a global perspective, the centring of human agency, an interest in the datafied pursuit of labour rights, and methodologies that value the agency of research participants and support collaboration and the co-production of knowledge.

1 | INTRODUCTION

The datafication of working life is simultaneously diminishing job quality and generating a set of tools to resist this deterioration, including in datafication's fraught interaction with regulatory regimes. As a contribution to capturing the regulatory dimensions of datafication, this article lays the conceptual groundwork for a new 'labour/data justice' framework. The notion of labour/data justice is crafted to capture both the risk of deterioration of working life at the labour/data nexus and the effective regulation of datafied work, including through data-driven strategies. The aim

of this article is to identify key components of a notion of labour/data justice that has the capacity to tackle these interlinked challenges. To this end, the article brings into dialogue the concepts of data justice and unacceptable forms of work (UFW). In doing so, it bridges the hitherto distinct research programmes of its co-authors by both extending McCann's research on unacceptable work[1] and adopting a notion of data justice as it is pursued in the work of Cruz-Santiago.[2]

Section 2 selects datafication as a concept that is particularly apt for capturing critical transformations in contemporary labour practices. Our interest is in how working lives are re-ordered by datafication in modes that are shaped by, or pertinent to, legal regulation, including in the rise of digital labour platforms, the accelerating use of data-driven tools for time measurement and management, the increasing harvesting of personal data from social media, the spread of customer-led performance evaluation, the intensification of workplace surveillance, and the expansion of data-driven governance. A notion of 'labour/regulatory datafication' is then proposed, which is sufficiently broad to capture both the datafication of working life and datafied strategies to secure labour rights. In Section 3, labour/regulatory datafication is analysed through the lens of McCann and Fudge's multidimensional model of UFW. The objective is both to clarify the dimensions in which the interlinked phenomena of datafication risk generating unacceptable work and to refine the multidimensional model so that it is better able to capture rapidly evolving features of contemporary labour markets. The literature on data justice is introduced in Section 4 as the most significant body of scholarship to reflect upon the ethical dimensions of datafied life. This literature is then probed further to identify a set of interlinked ontological, epistemological, and methodological contributions that have particular pertinence for a robust model of labour/regulatory datafication. The article concludes in Section 5 by arguing that empirical research on labour/regulatory datafication, and in particular on non-expert grassroots projects, would further illuminate the concept of labour/data justice, thereby contributing to the scholarly fields of both data justice and labour regulation.

2 | DATAFICATION AND THE LABOUR/REGULATION LANDSCAPE

Kennedy characterizes datafication as 'the quantification of aspects of life previously experienced in qualitative, non-numeric form'.[3] She lists communication, relationships, health and fitness,

[1] See for example D. McCann, *Regulating Flexible Work* (2008); D. McCann, 'Equality through Precarious Work Regulation: Lessons from the Domestic Work Debates in Defence of the Standard Employment Relationship' (2014) 10 *International J. of Law in Context* 507; D. McCann and J. Fudge, 'Unacceptable Forms of Work: A Multidimensional Model' (2017) 156 *International Labour Rev.* 147; D. McCann and J. Fudge, 'A Strategic Approach to Regulating Unacceptable Forms of Work' (2019) 46 *J. of Law and Society* 271.

[2] See for example E. Schwartz-Marin and A. Cruz-Santiago, 'Forensic Civism: Articulating Science, DNA and Kinship in Mexico and Colombia' (2016) 2 *Human Remains and Violence* 58; A. Cruz-Santiago, 'Lists, Maps, and Bones: The Untold Journeys of Citizen-Led Forensics in Mexico' (2020a) 15 *Victims and Offenders* 350; A. Cruz-Santiago, 'Normalising Digital Surveillance' in *Data Justice and Covid-19: Global Perspectives*, eds L. Taylor et al. (2020b) 185; A. Cruz-Santiago et al., 'Data Justice in Mexico: How Big Data Is Reshaping the Struggle' in *Resisting Global Apartheid and Technologies of Violence*, eds M. Aizeki et al. (forthcoming).

[3] H. Kennedy, 'Living with Data: Aligning Data Studies and Data Activism through a Focus on Everyday Experiences of Datafication' (2018) 1 *Krisis: J. for Contemporary Philosophy* 18, at 18. Similarly, Mayer-Schoenberger and Cukier define datafication as 'the transformation of social action into online quantified data, thus allowing for real-time tracking and predictive analysis': V. Mayer-Schoenberger and K. Cukier, *Big Data: A Revolution that Will Transform How We Live, Work and Think* (2013) 198.

transport and mobility, democratic participation, and leisure and consumption,[4] but could readily have included working life. This article centres on the set of related phenomena that are captured by accounts of the datafication of working life. Datafication, we argue (with others[5]), is a particularly revealing lens through which to interrogate evolutions in contemporary labour conditions and relations. Our interest is in analysing the challenges that datafication poses to, and how it shapes, regimes that regulate waged labour.

Valuable analyses of the datafication of work have emerged in recent years, most notably by Sánchez-Monedero and Dencik,[6] which situate the interlinked processes of datafication as a central facet of contemporary working life. A related set of literatures assess the cognate phenomenon of the digitalization of work, which facilitates and enhances the collection, processing, storage, use, and transfer of data.[7] As Sánchez-Monedero and Dencik note, '[t]echnological changes in the workplace have a long history, but the recent onus on the generation of data as a central part of the digital economy brings about particular transformations that deserve further attention'.[8]

Analyses of labour datafication frequently centre on the migration of work to digital platforms, which have been defined as digital processes that enable interaction between producers and consumers.[9] Labour platforms are increasingly characteristic of the delivery of a range of goods and services in both the Global North and the Global South.[10] Platform work is significant, if not staggering, in the numbers that it employs.[11] It is also expanding into uncharted sectors and jobs,

[4] Kennedy, id., citing N. Couldry, 'Foreword' in *Innovative Methods in Media and Communication Research*, eds S. Kubitschko and A. Kaun (2016) v.

[5] J. Sánchez-Monedero and L. Dencik, *The Datafication of the Workplace* (2019), at <https://datajusticeproject.net/wp-content/uploads/sites/30/2019/05/Report-The-datafication-of-the-workplace.pdf>. See also S. Adler-Bell and M. Miller, *The Datafication of Employment* (2018), at <https://tcf.org/content/report/datafication-employment-surveillance-capitalism-shaping-workers-futures-without-knowledge/>.

[6] Sánchez-Monedero and Dencik, id.

[7] Digitalization is defined by Brennen and Kreiss as 'the way in which many domains of social life are restructured around digital communication and media infrastructures': S. Brennen and D. Kreiss, 'Digitalization and Digitization' *Culture Digitally*, 8 September 2014, at <https://culturedigitally.org/2014/09/digitalization-and-digitization/>. See also E. J. Malecki and B. Moriset, *The Digital Economy: Business Organization, Production Processes and Regional Developments* (2007); Organisation for Economic Co-Operation and Development (OECD), *Ministerial Declaration on the Digital Economy ('Cancún Declaration')* (2016), at <https://www.oecd.org/internet/Digital-Economy-Ministerial-Declaration-2016.pdf>; Eurofound, *Automation, Digitisation and Platforms: Implications for Work and Employment* (2018) 15, at <https://www.eurofound.europa.eu/publications/report/2018/automation-digitisation-and-platforms-implications-for-work-and-employment>; C. Warhurst and W. Hunt, *The Digitalisation of Future Work and Employment: Possible Impact and Policy Responses* (2019), at <https://ideas.repec.org/p/ipt/laedte/201905.html>.

[8] Sánchez-Monedero and Dencik, op. cit., n. 5, p. 1.

[9] Sánchez-Monedero and Dencik make this point, noting the exception of Moore: Sánchez-Monedero and Dencik, id., p. 1. See for example P. Moore, *Humans and Machines at Work: Monitoring, Surveillance and Automation in Contemporary Capitalism* (2017). The definition is drawn from D. Howcroft and B. Bergvall-Kåreborn, 'A Typology of Crowdwork Platforms' (2019) 33 *Work, Employment and Society* 21, at 23.

[10] On platform work, see Howcroft and Bergvall-Kåreborn, id.; U. Rani and P. J. Singh, 'Digital Platforms, Data, and Development: Implications for Workers in Developing Economies' (2019) 41 *Comparative Labor Law and Policy J.* 263; Warhurst and Hunt, op. cit., n. 7, p. 9.

[11] The precise numbers are difficult to gauge: Howcroft and Bergvall-Kåreborn, id., p. 22. Kuek and colleagues estimated that there were 48 million registered workers using online labour platforms worldwide in 2013, though only 10 per cent were active: S. C. Kuek et al., *The Global Opportunity in Online Outsourcing (Transport and ICT)* (2015) 19.

notably in relatively neglected – and feminized[12] – realms, such as retail, hospitality, domestic work,[13] and care work.[14] Yet platform work is perhaps more significant as the most extreme manifestation of datafication, and as a potential harbinger of corroded working conditions, at least in some sectors of the economy. It is also important in its galvanizing role in shaping labour market-wide legal regulation, as a central site of contestation of labour laws, notable for the striking vigour of technology firms in defending legal claims and advocating for legislative reform, and as a focus of the law-centred activities of trade unions and other workers' organizations.

Though datafication is sometimes subsumed under platform work, it is better understood as an economy-spanning phenomenon, rapidly accelerating across a range of sectors, which encompasses the use of data, in multiple ways, to extract additional value from workers.[15] It is therefore vital to integrate traditional-form jobs into the analysis of datafied work: those jobs that are not contracted and organized through labour platforms.[16] This approach can reveal the transformations taking place in more traditional labour relationships through the impact of new data sources and data-driven tools,[17] including in feminized jobs. Datafication's impact on job quality, too, has been relatively under-studied until recently, and underplayed in the early debates on digitalization and labour regulation policy.[18] These discourses tended instead to focus on automation and the risk of job loss.[19] More recent contributions, however, have begun to analyse job quality, including in its regulatory dimensions.[20]

In this article, we highlight the particular resonance of datafication for analyses of labour regulation. To this end, we propose the notion of labour/regulatory datafication. This concept is designed to be expansive – to embrace the range of labour evolutions associated with datafication, including at datafied labour's intersection with regulatory regimes. The notion of labour/regulatory datafication encompasses and interlinks the datafication of working practices, the governance of datafied work (the modes in which datafication can be shaped, and re-ordered, by regulatory regimes and techniques), datafied modes of effecting legal rights, and the datafication of legal recourse through data-centred strategies to secure and effect legal rights. This notion is further developed in the following section by classifying key features of labour/regulatory datafication under multiple dimensions of unacceptable work.

[12] P. McDonald et al., 'Means of Control in the Organization of Digitally Intermediated Care Work' (2021) 35 *Work, Employment and Society* 872, at 874.

[13] See for example A. Hunt and F. Machingura, 'A Good Gig? The Rise of On-Demand Domestic Work' (2016) Overseas Development Institute (ODI) Development Progress Working Paper 7, at <https://odi.org/en/publications/a-good-gig-the-rise-of-on-demand-domestic-work/>.

[14] F. Flanagan, 'Theorising the Gig Economy and Home-Based Service Work' (2019) 61 *J. of Industrial Relations* 57; McDonald et al., op. cit., n. 12.

[15] Two phenomena can be singled out: 'data-mining' techniques and the external sale of workplace data, and the internal use of data by employers.

[16] Sánchez-Monedero and Dencik, op. cit., n. 5, p. 1.

[17] Id.

[18] P. V. Moore, 'The Mirror for (Artificial) Intelligence: In Whose Reflection?' (2019) 41 *Comparative Labor Law and Policy J.* 47; Warhurst and Hunt, op. cit., n. 7, p. 2.

[19] Warhurst and Hunt, id., pp. 6–9, referring to 'techno-anxiety'.

[20] See for example V. De Stefano, '"Negotiating the Algorithm": Automation, Artificial Intelligence, and Labor Protection' (2019) 41 *Comparative Labor Law and Policy J.* 15.

3 | LABOUR/REGULATORY DATAFICATION AND UNACCEPTABLE FORMS OF WORK

This section analyses labour/regulatory datafication through an unacceptable forms of work (UFW) paradigm co-developed by one of the authors of this article.[21] The aim is to identify how important features of datafication can generate UFW, defined by the International Labour Organization (ILO) as work undertaken in 'conditions that deny fundamental principles and rights at work, put at risk the lives, health, freedom, human dignity and security of workers or keep households in conditions of extreme poverty'.[22] This analysis lays the groundwork for a consideration, in Section 4, of how the data justice literature illuminates and enriches a labour/data justice framework.

The multidimensional model of UFW was designed by McCann and Fudge to capture the complexity of unacceptability in modern working life and to be used as a diagnostic tool by policy makers and researchers for identifying UFW across economies at different levels of development.[23] The model is calibrated to encompass the range of substantive features of UFW – a set of risks to which workers may be exposed that have the potential to render work unacceptable, the magnitude of any particular risk, and sites of effective intervention.[24]

This multidimensional model, we suggest, is of assistance in identifying how labour/regulatory datafication can generate UFW. The model identifies 12 substantive dimensions in which unacceptable work can emerge (Figure 1). These dimensions are designed to be mapped onto existing labour-regulatory schema, notably the International Labour Standards.[25] Prominent elements of labour/regulatory datafication, identified from within the intersecting literatures on the datafication of working life, can be categorized under the UFW model.

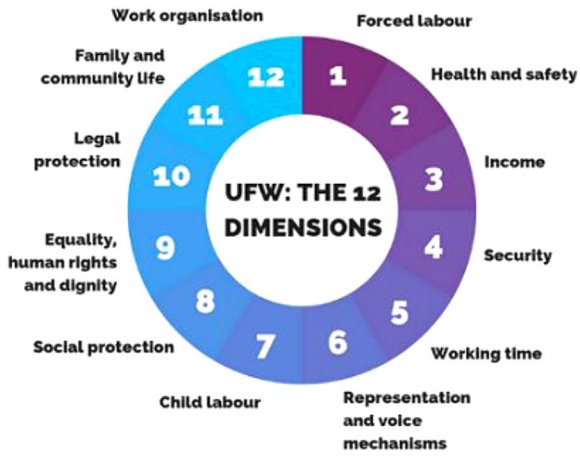

FIGURE 1 The 12 dimensions of UFW. Source: D. McCann, *Decent Work Regulation: Global Dialogue, Local Innovation* (2018), at <https://www.dur.ac.uk/resources/law/UFW/McCannDecentWorkRegulationFINAL17Dec.pdf>.

[21] McCann and Fudge, op. cit. (2017), n. 1.

[22] ILO, *The Director-General's Programme and Budget Proposals for 2014–15, Report II (Supplement)* (2013) International Labour Conference, 102nd Session, Geneva, para 49. See also ILO, *Towards the ILO Centenary: Realities, Renewal and Tripartite Commitment, Report 1(A)* (2013) International Labour Conference, 102nd Session, Geneva.

[23] McCann and Fudge, op. cit. (2017), n. 1, p. 171.

[24] Id.

[25] See further J. Fudge and D. McCann, *Unacceptable Forms of Work: A Global and Comparative Study* (2015) 48–51, at <http://www.ilo.org/public/libdoc/ilo/2015/487991.pdf>.

This classification is revealing of the nature of datafied work and of the multidimensional model's strengths and limitations in capturing evolutions in UFW. Mapping the features of datafied labour onto the UFW model allows us to identify the risks of the deterioration of the quality of working life at the labour/data nexus, to consider how datafication trends fit with a regulatory conception of poor-quality work, to identify important data-driven evolutions in the dimensions of UFW, and to refine the multidimensional model to accommodate the rapid changes in working life associated with datafication. In doing so, this section simultaneously contributes to operationalizing data justice.[26]

Six of the dimensions of the UFW model are particularly pertinent: income (Dimension 3); security (Dimension 4); working time (Dimension 5); equality, human rights, and dignity (Dimension 9); work organization (Dimension 12); and legal protection (Dimension 10).

Income (Dimension 3) and *working time (Dimension 5)* can usefully be considered in conjunction. Dimension 3 encompasses incomes that are inadequate (too low to satisfy basic needs) and insecure (including irregular payments, unjustified deductions, and unpaid work).[27] Dimension 5 includes insufficient hours, unpredictable schedules, and a lack of influence over working time.[28] Pairing these dimensions of the multidimensional model highlights how central the nexus of working time and wages is in datafied work. The core remunerative/temporal risk of datafication is of working hours of considerable variation and uncertainty. The research on platform work suggests that significant numbers of individuals are engaged in a continual process of securing future engagements, and therefore have little control over their work schedules.[29] Within jobs, employers have greater capacity to micro-measure time. Increased data intensity makes available more intricate tools of time measurement and governance.[30] Algorithmic decision making can even be used to manage wage setting and the allocation of hours. Reliance on these techniques can generate unpredictable and unrealistic schedules,[31] fragmented working time, and uncertain incomes.

Security (Dimension 4) was designed to capture the contractual form and termination of employment relationships. It encompasses day labour[32] and insecure employment (no certainty of continuing employment or termination without a valid reason or procedural/other protections).[33] This typology is robust in capturing the macro-level insecurity associated with platform work, and in particular the tendency, mentioned above, for this labour to be organized as discrete

[26] As Taylor notes, connecting knowledge about datafication to policy and law is an important element of operationalizing data justice: L. Taylor, 'What Is Data Justice? The Case for Connecting Digital Rights and Freedoms Globally' (2017) *Big Data & Society* 1, at 11. Taylor highlights Dalton and colleagues' observation that the knowledge needed to pursue a more socially just approach to digital data is not incorporated into policy, law, or practice at the necessary level: C. M. Dalton et al., 'Critical Data Studies: A Dialog on Data and Space' (2016) *Big Data & Society* 1.

[27] McCann and Fudge, op. cit. (2017), n. 1, Table 7.

[28] Id.

[29] Rani and Singh, op. cit., n. 10, p. 270.

[30] See for example L. Amoore and V. Piotukh, 'Life beyond Big Data: Governing with Little Analytics' (2015) 44 *Economy and Society* 341; P. V. Moore, *The Quantified Self in Precarity: Work, Technology and What Counts* (2017); A. Petersen, *Digital Health and Technological Promise: A Sociological Inquiry* (2019); K. Hoeyer and S. Wadmann, '"Meaningless Work": How the Datafication of Health Reconfigures Knowledge about Work and Erodes Professional Judgement' (2020) 49 *Economy and Society* 433.

[31] Time allocation for delivery drivers, for example, may not adequately take into account external conditions such as traffic or delivery locations.

[32] This includes casual contracts, 'zero-hours' contracts, and so on: McCann and Fudge, op. cit. (2017), n. 1, Table 7.

[33] Id.

engagements, and therefore potentially to channel workers into multiple job holding or underemployment.[34] In relation to reasons for/protections against dismissal, the potential for 'dismissal by algorithm', executed without human intervention, jeopardizes effective worker protection.[35]

The datafication literature also enriches the security dimension by highlighting the significance of facets of the employment relationship beyond termination that govern worker security – namely, hiring and evaluation.[36] On hiring, concerns have been raised that personal data gathered on the internet/from social networks is being used in hiring decisions,[37] inhibiting employment security by potentially curbing access to the job market. Datafication, furthermore, is facilitating evolutions in worker evaluation. Customer rating is an increasingly prominent evaluation tool for employers, as an element of a broader trend towards quantification and ranking as a form of governance used by both governments and business.[38] It has an increasing presence in a range of jobs and is the core performance evaluation technique for platform firms.[39] Yet customer evaluation mechanisms tend to lack transparency, can be discriminatory, and may not account for various contingencies that might affect a worker's performance, such as health status, care responsibilities, or external circumstances (for example, for delivery drivers, these might include traffic and delivery location).[40]

Equality, human rights, and dignity (Dimension 9) encompasses discrimination; unequal pay; abuse, violence, and harassment; and lack of respect for human rights or for national, ethnic, and social identities and cultures.[41] In datafied work, automated decision making and surveillance can be singled out as evolutions that reinforce Dimension 9. As recruitment, remuneration, and termination processes are automated, new channels for discrimination are opened up, with the potential for algorithm-based management to obscure biases behind ostensibly objective decision making.[42] Data technologies may be deployed that are unresponsive to those whose data is collected and analysed, exacerbating existing inequalities and perhaps even creating new ones. Taylor's exploration of data-driven discrimination in India's biometric population database Aadhaar, for example, highlights the use of technologies that implicitly embody 'a middle-class standard for normality rather than the precarity and unpredictability of the lives of the poor',[43] thus amplifying inequalities.[44] Similar outcomes have the potential to emerge in workplace

[34] J. Berg et al., *Digital Labour Platforms and the Future of Work: Towards Decent Work in the Online World* (2018).

[35] De Stefano, op. cit., n. 20, pp. 23–24.

[36] Sánchez-Monedero and Dencik, op. cit., n. 5.

[37] De Stefano, op. cit., n. 20, p. 27, citing E. Dagnino, 'People Analytics: lovoro e tutele al tempo del management tramite big data' (2017) 3 *Labour and Law Issues* 1.

[38] See recently for example D. Nelken and M. Siems (eds), *Numbers in an Emergency: The Many Roles of Indicators in the COVID-19 Crisis* (2021) Special Issue of the *International J. of Law in Context* 17.

[39] See for example Howcroft and Bergvall-Kåreborn, op. cit., n. 9, p. 30.

[40] Moore, op. cit., n. 18, pp. 64–65.

[41] McCann and Fudge, op. cit. (2017), n. 1, Table 7.

[42] A. Aloisi and E. Gramano, 'Artificial Intelligence Is Watching You at Work: Digital Surveillance, Employee Monitoring, and Regulatory Issues in the EU Context' (2019) 41 *Comparative Labor Law and Policy J.* 95, at 119; V. De Stefano, 'Automation, Artificial Intelligence, and Labor Protection' (2019) 41 *Comparative Labor Law and Policy J.* 3, at 5.

[43] Taylor, op. cit., n. 26, p. 5.

[44] Id., pp. 4–5, citing J. A. Johnson, 'From Open Data to Information Justice' (2014) 16 *Ethics and Information Technology* 263; S. Priya and A. Priya, 'Even in Delhi, Basing PDS on Aadhaar Is Denying Many the Right to Food' *The Wire*, 25 October 2016, at <https://thewire.in/75359/right-to-food-how-aadhaar-in-pds-is-denying-rights/>; A. Yadav, 'In Rajasthan, There

settings, including where technologies designed in the Global North are used in very different contexts around the world.

Datafication also, centrally, manifests in working life as the increased technological capacity for workplace surveillance, which has emerged as a significant threat to dignity at work. Kennedy notes that, across contemporary societies, surveillance is evolving into a new guise, which she characterizes as 'ubiquitous, opaque and speculative'.[45] The data justice literature has a particular preoccupation with surveillance and the expansion of technologies that facilitate it.[46] Dencik and colleagues, for example, design their concept of data justice to highlight the role of data-driven surveillance, and related Big Data decision making and governance, in conceptions of social justice, defining data justice to encompass the role of surveillance in (new) forms of governance.[47] These kinds of concerns have intensified during the COVID-19 pandemic,[48] in particular in countries in which surveillance technology has been used to monitor social activists.[49]

In the realm of the workplace, increased data intensity has generated more probing surveillance tools that track and document worker activity. Data is drawn from proliferating information and communication technologies: internet software and multimedia tools, including social networks, collaboration tools, GPS, 'wearables', and sensors.[50] Artificial intelligence (AI) technologies are further expanding employers' capacities for digital surveillance as personal data has progressively become both fuel and quarry for AI applications.[51] Automated performance monitoring – sometimes packaged as 'people analytics' – is driven by the use of these technologies to track the workforce (such as keystroke tracking and screenshots).[52] The digital data generated provides detailed and real-time information on worker activities. Sometimes, highly personal data can be collected: location history; use of email, websites, printers, and telephones; even movement and tone of voice. These technologies support more expansive and probing scrutiny by employers, risking intrusion into workers' private spheres and abuse of personal data.[53]

Is "Unrest at the Ration Shop" because of Error-Ridden Aadhaar' *Scroll.in*, 2 April 2016, at <http://scroll.in/article/805909/in-rajasthan-there-is-unrest-at-the-ration-shop-becaues-of-error-ridden-aadhaar>.

[45] Kennedy, op. cit., n. 3, p. 19, citing M. Andrejevic and K. Gates, 'Big Data Surveillance: Introduction' (2014) 12 *Surveillance and Society* 185; L. Dencik and J. Cable, 'The Advent of Surveillance Realism: Public Opinion and Activist Responses to the Snowden Leaks' (2017) 11 *International J. of Communication* 763; T. Lehtiniemi, 'Personal Data Spaces: An Intervention in Surveillance Capitalism' (2017) 15 *Surveillance and Society* 626.

[46] L. Dencik et al., 'Towards Data Justice? The Ambiguity of Anti-Surveillance Resistance in Political Activism' (2016) *Big Data & Society* 1.

[47] Id., p. 9.

[48] Taylor et al. (eds), op. cit., n. 2.

[49] For example, on Mexico, see Cruz-Santiago, op. cit. (2020b), n. 2.

[50] Sánchez-Monedero and Dencik, op. cit., n. 5, p. 1.

[51] E. Ernst et al., 'The Economics of Artificial Intelligence: Implications for the Future of Work' (2018) ILO Future of Work Research Paper Series 1, 13–15. See also Aloisi and Gramano, op. cit., n. 42, pp. 97–100, citing Council of Europe Consultative Committee of the Convention for the Protection of Individuals with Regard to Automatic Processing of Personal Data (Convention 108), *Guidelines on Artificial Intelligence and Data Protection* (2019).

[52] Sánchez-Monedero and Dencik define 'people analytics' as the use of data collection and analysis techniques to understand employees and optimize their performance: Sánchez-Monedero and Dencik, op. cit., n. 5, pp. 35–41. See also Moore, op. cit., n. 18, pp. 57–60.

[53] Labour law scholars have been particularly alert in exploring the risk of surveillance to privacy and data protection. See for example D. A. Alonso, 'Social Media in the Employment Relationship Context: A Typology of Emerging Conflicts, and Notes for the Debate' (2018) 39 *Comparative Labor Law and Policy J*. 287; Aloisi and Gramano, op. cit., n. 42.

Work organization (Dimension 12) is elaborated in McCann and Fudge's model as including a lack of control over the work process (task, decision, timing, and method) and intense physical and mental demands.[54] Datafication exacerbates the risk of both. By generating new forms of inspection and management, it potentially erodes the space for workers to exercise autonomy and professional judgement.[55] As outlined above, data storage and processing can be used to monitor a worker's activities in real time, risking work intensification.[56] Personal data gained from surveillance can be used as productivity indicators. As a revealing illustration, data collected through wearables can be used to direct workers to assignments.[57] Data can be analysed using AI to assess workers' productivity, potentially curbing the time available for, for example, health and safety procedures.

Finally, *legal protection (Dimension 10)* encompasses exclusion from legal protections, inadequate implementation/enforcement of legal protections, lack of information on legal rights, and the lack of an express contact.[58] Datafication suggests a route out of these problems by offering data-driven access to legal rights. This potential opportunity is returned to in Section 4.2.3.

4 | TOWARDS LABOUR/DATA JUSTICE

The above classification of key features of labour/regulatory datafication according to the multidimensional model of UFW has highlighted how the spread of data-driven processes and tools risks generating low-quality jobs. The aim of this article is to sketch an analytical and conceptual framework of labour/data justice that captures and responds to labour/regulatory datafication's threat to decent work.[59] To construct that framework, and an associated research agenda, we contend that it is fruitful to engage with the literature on data justice. In recent years, a compelling body of scholarship on notions of data justice has emerged and rapidly evolved, including in the work of one of the co-authors of this article,[60] which has the aim of building an ethical framework for conceptualizing and responding to datafication. This section argues that the data justice literature is valuable – conceptually, epistemologically, and methodologically – for exploring the labour/regulatory dimensions of datafication, how it is generating unacceptable work, and the possibilities for resisting perilous datafication processes and constructing data-driven strategies that can be used to improve or eliminate unacceptable work.[61]

[54] McCann and Fudge, op. cit. (2017), n. 1, Table 7.

[55] ILO, *Work for a Brighter Future: Global Commission on the Future of Work* (2019) 43. Participants in Hoeyer and Wadmann's study of the datafication of Danish health care, for example, reported meaningless 'data work': Hoeyer and Wadmann, op. cit., n. 30.

[56] Warhurst and Hunt, op. cit., n. 7, pp. 1, 13.

[57] Sánchez-Monedero and Dencik, op. cit., n. 5, p. 23.

[58] McCann and Fudge, op. cit. (2017), n. 1, Table 7.

[59] An early iteration of the notion of labour/data justice was developed as part of the Global Challenges Research Fund (GCRF) Network on Labour/Data Justice in the Global South: D. McCann et al., *Labour/Data Justice in the Global South: A Research/Impact Agenda* (2020) (on file with the authors).

[60] Cruz-Santiago, op. cit. (2020a), n. 2; Cruz-Santiago, op. cit. (2020b), n. 2.

[61] Key publications on data justice are Dencik et al., op. cit., n. 46; Taylor, op. cit., n. 26; R. Heeks and J. Renken, 'Data Justice for Development: What Would It Mean?' (2018) 34 *Information Development* 90; Kennedy, op. cit., n. 3; L. Dencik et al., 'Exploring Data Justice: Conceptions, Applications and Directions' (2019) 22 *Information, Communication & Society* 873; S. Milan and E. Treré, 'Big Data from the South(s): Beyond Data Universalism' (2019) 20 *Television & New Media* 319;

4.1 | Data justice: an ethical path through datafication

Conceptions of data justice respond to the datafication of everyday life by centring on social justice. Data justice literatures stem in part from an anxiety that the 'data revolution' is widely conceived as primarily technical – that 'the power of data to sort, categorise and intervene has not yet been explicitly connected to a social justice agenda'.[62] Yet, as Dencik and colleagues note,

> How we come to understand the world, what services we are able to access, where we are able to go, what we are able to do, and the way we are governed all potentially feature data practices that shape the terms and conditions for our participation in society.[63]

The data justice literature responds to the ways in which data is generated, collected, analysed, and used in the datafied society.[64] Contributions share the broad objective of identifying 'ethical paths through a datafying world'[65] with a particular focus on the implications of data-driven practices for social justice claims.[66] The literature recognizes, as Taylor and colleagues observe, that data technologies 'both reflect and construct justice and injustice'.[67] Taylor defines data justice expansively, as 'fairness in the way people are made visible, represented, and treated as a result of their production of digital data'.[68] Heeks and Renken view it as 'the primary ethical standard by which data-related resources, processes and structures are evaluated'.[69] Within these broad objectives, conceptions of justice, usefully, are capacious and deliberately left open to different understandings, including from the bottom up.[70] Heeks and Renken, for example, identify three pertinent theories of justice: instrumental (the fair use of data), procedural (the fair handling of data), and distributive (the fair distribution of data).[71] Meanwhile, Dencik and colleagues perceive data justice as encompassing such values as security, autonomy, dignity, fairness, and sustainability.[72]

The primary focus of the data justice literature is on the gathering and use of digital data on populations. Dencik and colleagues, for example, shape their notion of data justice as a way to

Taylor et al. (eds), op. cit., n. 2. The term 'data justice' had been deployed prior to this literature; Dencik and colleagues highlight the Data Justice organization, a United States (US) consumer group founded in 2005: Dencik et al., op. cit., n. 46, p. 9, citing P. Baker, 'Data Justice Taking on Big Data as a Broader Economic Issue' *FierceBigData*, 18 March 2015.

[62] Taylor, op. cit., n. 26, p. 1.

[63] Dencik et al., op. cit., n. 61, p. 873.

[64] Id.

[65] Taylor, op. cit., n. 26, p. 2.

[66] Dencik et al., op. cit., n. 46, p. 9; Dencik et al., op. cit., n. 61, pp. 874–876.

[67] L. Taylor et al., 'What Does the COVID-19 Response Mean for Global Data Justice?' in Taylor et al. (eds), op. cit., n. 2, p. 9, at p. 14.

[68] Taylor, op. cit., n. 26, p. 1.

[69] Heeks and Renken, op. cit., n. 61, p. 92, adapted from J. A. Johnson 'The Value – and Limits – of Distributive Justice in a Justice-Centered Approach to Information Privacy' (2016) Paper presented at the Western Political Science Association 2016 Annual Meeting, San Diego, CA, 23–26 March, 2.

[70] Taylor et al., op. cit., n. 67, p. 12.

[71] Heeks and Renken, op. cit., n. 61, pp. 92–93.

[72] Dencik et al., op. cit., n. 46, p. 9.

foreground data-driven surveillance.[73] 'Data fumes' (data emitted as a by-product of the use of technological devices and services) have also attracted particular attention.[74] Yet the data justice literature also exhibits a nascent interest in labour. Workplace and social protection developments tend to be included among overarching concerns about datafication. Taylor highlights governmental systems that rely on 'dataveillance' to monitor recipients of state welfare funds.[75] Dencik and colleagues note that labour relations are implicated in the rapid spread of data processes and that deteriorating working conditions are exacerbated in the datafied society,[76] and show an interest in the implications of the data-driven society for workers' rights.[77] Platform work is singled out. Milan and Treré, for example, point to the 'algorithmic power' of labour platforms in intensifying existing inequalities.[78] Research on the regulation of working life also has a presence, notably on the datafication of social protection schemes.[79]

Working life has not, however, tended to be a central preoccupation of the data justice literature. The key contribution, as noted above, is by Sánchez-Monedero and Dencik in a paper that focuses on the datafication of the workplace, highlights the new tools and predictive models being deployed by employers and other bodies, and provides an overview of European trends.[80] Labour regulation features in the literature, to the extent that data justice scholarship tends to treat surveillance as a form of governance.[81] There is considerably less analysis of labour regulation in its more formal guise, as legislative, judicial, bargained, or soft law frameworks, or of labour law's characteristic models of justice. Yet the concerns of labour regulation research noticeably align with those of the data justice literature, and in particular with the core interest of this scholarship on datafication's implications for social justice.[82] It is worthwhile, then, considering what the data justice literatures can add to the reflection on conceptual and practical responses to labour/regulatory datafication, with a focus on UFW.

4.2 | Lessons from the data justice literatures

To identify key components of a labour/data justice framework, this section explores the data justice literatures. We identify within this scholarship a set of significant conceptual, theoretical,

[73] Id.

[74] Taylor, op. cit., n. 26, p. 1, citing J. Thatcher, 'Living on Fumes: Digital Footprints, Data Fumes, and the Limitations of Spatial Big Data' (2014) 8 *International J. of Communication* 19.

[75] Taylor, id., p. 2, citing T. Lemke, '"The Birth of Bio-Politics": Michel Foucault's Lecture at the Collège de France on Neo-Liberal Governmentality' (2001) 30 *Economy and Society* 190.

[76] Dencik et al., op. cit., n. 61, pp. 873–874.

[77] Dencik et al., op. cit., n. 46, p. 9.

[78] Milan and Treré, op. cit., n. 61, p. 320, citing J. Y. Chen, 'Thrown under the Bus and Outrunning It! The Logic of Didi and Taxi Drivers' Labour and Activism in the On-Demand Economy' (2017) 20 *New Media & Society* 2691.

[79] S. Masiero and S. Das, 'Datafying Anti-Poverty Programmes: Implications for Data Justice' (2019) 22 *Information, Communication & Society* 916; S. Park and J. Humphry, 'Exclusion by Design: Intersections of Social, Digital and Data Exclusion' (2019) 22 *Information, Communication & Society* 934.

[80] Sánchez-Monedero and Dencik, op. cit., n. 5.

[81] See for example Dencik et al., op. cit., n. 46, p. 2.

[82] In labour law scholarship, see for example Alonso, op. cit., n. 53; B. Waas et al. (eds), *Digital Economy and the Law* (2018) Special Issue of *Work Organisation, Labour and Globalisation* 12; Aloisi and Gramano, op. cit., n. 42; De Stefano, op. cit., n. 20; De Stefano, op. cit., n. 42; E. Gramano, 'Digitalisation and Work: Challenges from the Platform-Economy' (2020) 15 *Contemporary Social Science* 476.

and methodological insights that have the potential to enrich a labour/data justice model. These insights are interrelated but can be imperfectly separated as a global perspective (Section 4.2.1), the central role of human agency (Section 4.2.2), the embrace of datafied engagements with labour rights (Section 4.2.3), and methodological innovations (Section 4.2.4).

4.2.1 | A global perspective: labour/data justice in fragile settings[83]

The first compelling aspect of the data justice literature, towards a robust concept of labour/data justice, is its sophisticated elaboration of the need for a global perspective on datafication.[84] As Taylor points out, the exponential rise in technology adoption around the world and the resulting global spread of data analytics urgently demand a global outlook on the just use of digital data.[85] This insight from the data justice literature parallels, and responds to, an increasing awareness of datafication in development policy. As Heeks and Renken note, both 'data' and 'justice' have, emblematically, considerably greater prominence in the policy documentation that supports the Sustainable Development Goals when compared to the Millennium Development Goals.[86] Awareness of data acquisition and use is also increasingly prominent in national-level policy agendas around the world.[87]

A global perspective reveals debates on datafication to be framed through '"Western" concerns, contexts, user behaviour patterns, and conceptual frameworks'.[88] Taylor, for example, highlights a double standard on privacy and the value of visibility between richer and poorer countries.[89] In response to this constrained focus, some scholars have called for the data justice literatures to transcend a purported universalism and in particular to focus on the concerns and needs of the Global South.[90]

Given the cross-regional datafication of working life, a global perspective is a crucial element of a robust model of labour/data justice. The data justice literature, we argue, generates crucial insights for a globally pertinent research framework. We identify three key elements from this literature – and in particular from the work of Milan and Treré[91] – that we suggest should be embedded in a conception of labour/data justice: awareness of the particularly intense impacts of datafication in lower-income settings; the emergence of sophisticated conceptions of the Global

[83] The imagery of fragility is from Milan and Treré: Milan and Treré, op. cit., n. 61, p. 319.

[84] Taylor, op. cit., n. 26, p. 7.

[85] Id., p. 2, referencing International Telecommunication Union (ITU) data that 5.5 billion of the world's 7 billion mobile phones are in low- and middle-income countries, in which 2.1 billion people are also online: ITU, 'Key ICT Indicators for Developed and Developing Countries and the World (Totals and Penetration Rates)' (2015), at <www.itu.int/en/ITU-D/Statistics/Documents/statistics/2015/ITU_Key_2005-2015_ICT_data.xls>.

[86] Heeks and Renken, op. cit., n. 61, p. 90, citing R. Heeks, 'From the MDGs to the Post-2015 Agenda: Analysing Changing Development Priorities' (2014) Development Informatics Working Paper No. 56.

[87] For example, Taylor points out that in many African states the digital era is generating a fraught interaction between notions of *ubuntu* (humanity towards the collective) and privacy: Taylor, op. cit., n. 26, pp. 7–8, drawing on A. B. Makulilo, '"A Person Is a Person through Other Persons": A Critical Analysis of Privacy and Culture in Africa' (2016) 7 *Beijing Law Rev*. 192.

[88] Milan and Treré, op. cit., n. 61, p. 320.

[89] Taylor, op. cit., n. 26, p. 8.

[90] Milan and Treré, op. cit., n. 61.

[91] Id.

South; and the incorporation of knowledge, experience, and ideas derived from countries beyond the Global North.

Central, first, is awareness of the impacts of datafication in lower-income settings; in the words of Milan and Treré, datafication 'hits harder where people, laws, and human rights are the most fragile'.[92] In this vein, some authors highlight that datafication can be configured within broader processes of colonization, situating data extraction, storage, and processing within historical processes of 'domination, extraction, exploitation and oppression'.[93] Kidd, for example, conceptualizing the historical context for data collection and control as resource extraction and colonization, highlights contests over maps as one of the earliest examples of data activism.[94] Coloniality is also identified in labour settings, where, it is argued, it is reproduced on global digital platforms.[95] Heeks and Renken respond by arguing for a structural approach in conceptualizing data justice in a development context that is attentive to 'understanding the place of developing countries within global and historical structures of political economy, or recognising the resource and capability constraints typical of developing countries'.[96]

Second, the data justice literature simultaneously yields rich conceptualizations of the Global South. Milan and Treré call for a conception of the Global South as a 'composite and plural' entity that encompasses widely varying experiences and perspectives.[97] In line with this approach, they stress that different communities are impacted in different ways by datafication, with the most intense impacts likely to be experienced by individuals and communities with 'sparse access to human rights protection, education, or income, and/or with non-mainstream visions of their future', including for class, racial, legal, or sociocultural reasons.[98] The construction of a complex imagery of the Global South also highlights cross-regional trends. Segura and Waisbord, for example, caution against assumptions that data citizenship in the Global South is necessarily different than in the Global North.[99] This sophisticated conception of the Global South prompts vigilance in recognizing that, often, 'processes and practices observed in the North replicate in the South with no particular differences'.[100]

Third, the data justice literature is also attentive to the need to embrace knowledge, experience, ideas, and innovations that emerge from lower-income countries. Milan and Treré argue for the need to foster recognition and exploration of ways of thinking and using data that are emerging 'from the margins'.[101] Digital cultures and politics in the periphery, as these authors point out, do

[92] Id., p. 319.

[93] Id., p. 326, citing N. Couldry and U. A. Mejias, 'Data Colonialism: Rethinking Big Data's Relation to the Contemporary Subject' (2019) 20 *Television & New Media* 33; M. Mann and A. Daly, '(Big) Data and the North-*in*-South: Australia's Informational Imperialism and Digital Colonialism' (2019) 20 *Television & New Media* 379; P. Ricaurte, 'Data Epistemologies, The Coloniality of Power, and Resistance' (2019) 20 *Television & New Media* 350.

[94] D. Kidd, 'Extra-Activism: Counter-Mapping and Data Justice' (2019) 22 *Information, Communication & Society* 954.

[95] A. Casili, 'Digital Labor Studies Go Global: Toward a Digital Decolonial Turn' (2017) 11 *International J. of Communication* 3934.

[96] Heeks and Renken, op. cit., n. 61, p. 99.

[97] Milan and Treré, op. cit., n. 61, pp. 325–326.

[98] Id., p. 321.

[99] M. S. Segura and S. Waisbord, 'Between Data Capitalism and Data Citizenship' (2019) 20 *Television & New Media* 412, at 417.

[100] Milan and Treré, op. cit., n. 61, p. 326.

[101] Id., p. 324. See also Dencik et al., op. cit., n. 61, pp. 874–875; E. Treré, *Hybrid Media Activism: Ecologies, Imaginaries, Algorithms* (2019).

not merely replicate the imageries of data justice crafted in the global Global North. The focus, they argue, should be on the 'context-specific and contentious' nature of technological developments as they are shaped by the diverse interests of governments, activists, indigenous communities, and other actors.[102]

These facets of the global perspective of the data justice literature are crucial to constructing a viable framework of labour/data justice. In identifying the effects of datafication, labour literatures have so far most effectively adopted a global outlook when tracking the spread of platform work.[103] Rani and Singh, for example, highlight the popularity of digital platforms in development policies, especially since the global economic crisis.[104] In these agendas, platforms are presented as giving workers in lower-income countries access to global labour markets and as providing labour market opportunities to under-represented groups who would otherwise have restricted access, such as women and the disabled.[105] In consequence, governments have become interested in investing in digital infrastructure and closing 'digital divides',[106] and private-sector training programmes are being developed to equip workers with the digital skills to work for labour platforms.[107] These initiatives have been criticized for their deficient integration into broader development strategies,[108] the potential for deskilling (given signs that platforms often do not attract the low-skilled and unemployed workers envisaged as beneficiaries),[109] and in relation to data use, tax revenues, and job quality.[110] This kind of analysis of datafied jobs in lower-income settings is ripe to be extended to a broader range of working relationships, recognizing the need to investigate the impacts of datafication within contexts of high unemployment, informality, and substantial poverty.[111]

The call for sophisticated conceptualizations of the Global South highlights the need for an understanding of datafication's uneven evolution in the labour sphere. As Bertossa points out, datafication is unfolding differently in different regions, and also varies within countries, by class, for example, or in more and less developed parts of the economy.[112] Recognizing this diversity of impacts is vital if a labour/data justice framework is to capture fully the experience of lower-income countries in all of their diversity. This facet of the global perspective of the data justice literature aligns with the work of one of the co-authors. The multidimensional model of UFW, outlined in Section 3, strives towards a complex picture of the Global South by recognizing that the

[102] Milan and Treré, id.

[103] See for example M. Graham et al., 'Digital Labour and Development: Impacts of Global Digital Labour Platforms and the Gig Economy on Worker Livelihoods' (2017) 23 *Transfer: European Rev. of Labour and Research* 135; Rani and Singh, op. cit., n. 10.

[104] Rani and Singh, id., p. 266.

[105] Id., p. 264, citing Kuek et al., op. cit., n. 11; A. Schriner and D. Oerther, 'No Really, (Crowd) Work is the Silver Bullet' (2014) 78 *Procedia Engineering* 224.

[106] Rani and Singh, id., pp. 264–266, citing Schriner and Oerther, id.; Graham et al., op. cit., n. 103; R. Heeks, 'Decent Work and the Digital Economy: A Developing Country Perspective on Employment Impacts and Standards in Online Outsourcing, Crowdwork etc.' (2017) Working Paper No. 71.

[107] Rani and Singh, id., p. 266, citing Heeks, id.

[108] Id., p. 266.

[109] Id., pp. 266, 268.

[110] Id., pp. 264–265.

[111] Milan and Treré, op. cit., n. 61, p. 320.

[112] D. Bertossa, 'Securing Data and Labor Rights in the Post-Covid Digital Era' *Bot Populi*, 1 May 2020, at <https://botpopuli.net/labor-digital-economy-community-data-rights-worker-covid>.

nature and magnitude of UFW, and the most effective regulatory responses, differ from country to country depending upon factors such as levels of economic development, political and governance structures, the vigour of civil society, the strength and complexion of labour market institutions, and social partner strategies.[113] The model also opens up space for knowledge and innovations from countries beyond the Global North, in that it is designed to be used by local actors to construct models of UFW suited to a range of regional, national, sectoral, and occupational contexts.[114]

4.2.2 | Human agency at the core of labour/data justice

A second valuable aspect of the data justice literature for analyses focused on labour/regulatory datafication is its attentiveness to agency. Mainstream discourses on the role of data in contemporary societies have been criticized as hostage to a techno-centric view of data, which privileges the technical aspects over human agency. The data justice literature, by contrast, urges scholars to re-centre agency, shifting focus to the data practices of human actors.[115] Heeks and Renken, for example, refer to 'agentic justice' – the role of individual agents in the practice of data justice.[116] It is argued that this focus on human agency has particular pertinence to analyses of the Global South.[117]

Certain aspects of this emphasis on agency are particularly compelling for a labour/data justice model: an interest in non-experts' perspectives on datafication, an attentiveness to the everyday, a focus on the local, and a resort to capabilities theory to articulate justice. First, the centring of agency is articulated to embrace the experience and views of non-experts. Kennedy notes the limited attention paid to non-expert perspectives on data processing and the use of data.[118] There is a need, she argues, to take account of what non-expert citizens report would enable them to 'live better with data'.[119] Otherwise, there is a risk that efforts towards data justice will be based on the perspectives of technology elites. Second, Kennedy identifies the everyday as a critical absence in data studies, calling for a greater understanding of 'everyday living with data'.[120] A focus on quotidian experiences of datafication, and efforts to benefit from, live with, or resist it, opens up the possibility for democratic agency.[121]

[113] McCann and Fudge, op. cit. (2017), n. 1, p. 172.

[114] Id., p. 171. See also D. McCann, *Global Multi-Scalar Dialogue: A New Model of Stakeholder Engagement* (2020), at <https://www.durham.ac.uk/media/durham-university/departments-/law-school/policy-engagement/decent-work-regulation-images/GlobalMulti-ScalarDialogueResearchBrief.pdf>.

[115] Heeks and Renken, op. cit., n. 61, p. 95; Kennedy, op. cit., n. 3, pp. 20–21; Milan and Treré, op. cit., n. 61, pp. 327–328.

[116] Heeks and Renken, id., pp. 98–99.

[117] Milan and Treré, op. cit., n. 61, p. 328.

[118] Kennedy, op. cit., n. 3, p. 20, citing N. Couldry and A. Powell, 'Big Data from the Bottom Up' (2014) *Big Data & Society* 1; M. Michael and D. Lupton, 'Toward a Manifesto for the "Public Understanding of Big Data"' (2015) 25 *Public Understanding of Science* 104; M. Ruckenstein and M. Pantzar, 'Datafied Life: Techno-Anthropology as a Site for Exploration and Experimentation' (2015) 19 *Techné: Research in Philosophy and Technology* 191; S. Pink et al., 'Mundane Data: The Routines, Contingencies and Accomplishments of Digital Living' (2017) *Big Data & Society* 1.

[119] Kennedy, id., p. 21.

[120] Id., p. 22.

[121] Id., p. 21, citing S. Milan, 'Data-Logies: The Conditions of Possibility for Democratic Agency in the Datafied Society' (2017) Data Power Conference Keynote Talk, Carleton University, Ontario, Canada, 22–23 June.

Third, the focus on agency brings with it an attentiveness to the local level: a 'bottom-up' approach to conceptualizing and researching labour/data justice that is targeted at local knowledge, experience, and initiatives.[122] This approach is interested in grassroots data projects that capture and process data at the local level – participatory design practices, for example, or community involvement in building alternative data infrastructures.[123] Milan and Treré call for investigations of the diverse ways in which citizens and civil-society organizations in the Global South are already engaging in grassroots data practices to resist datafication processes that generate and cement inequality.[124] One compelling dimension of the localized approach is the related attention to 'small data'. The Big Data preoccupation of mainstream analyses, it is argued, configures individuals as, primarily, sources and producers of data that is aggregated and used by others. The data justice literature is attentive to 'small' or 'good enough'[125] data produced by non-experts that enables them to live the lives that they value.[126] The notion of 'small data justice' is particularly helpful for research in the Global South.[127] In this regard, Mann highlights the benefits of collecting and analysing data without the involvement of technology firms.[128] In this vein, for example, Ricaurte explores citizen resistance to data colonialism and gender violence in Mexico,[129] as does one of the co-authors of this article, Cruz-Santiago, in her work on citizen-led data collection and analysis.[130]

Fourth, the focus on agency prompts a recourse to Sen's capabilities model to conceptualize justice.[131] Data justice scholars find capability theory valuable in its recognition that individuals may be unable to access justice due to lack of capabilities[132]: an inability to create, find, understand, or use data due to exclusion from decision making, low levels of literacy, or a lack of technological skills.[133] It is suggested, then, that capabilities in the context of the datafied society encompass, for example, participation in data value chains, access to data, and inclusion in decision making on the use of technology.[134] Taylor, in particular, turns to the capabilities model as 'an overarching conceptual framework within which research and debate on data justice can identify what freedoms people value with regard to data technologies'.[135]

[122] Taylor, op. cit., n. 26, p. 7, citing Heeks and Renken, op. cit., n. 61.

[123] Dencik et al., op. cit., n. 61, p. 875, citing S. Costanza-Chock, 'Design Justice, AI, and Escape from the Matrix of Domination' (2018) 3.5 *J. of Design and Science*, at <https://jods.mitpress.mit.edu/pub/costanza-chock/release/4>.

[124] Milan and Treré, op. cit., n. 61, p. 328.

[125] R. Kitchin and T. P. Lauriault, 'Small Data in the Era of Big Data' (2015) 80 *GeoJournal* 463; J. Gabrys et al., 'Just Good Enough Data: Figuring Data Citizenships through Air Pollution Sensing and Data Stories' (2016) *Big Data & Society* 1.

[126] Couldry and Powell, op. cit., n. 118.

[127] Heeks and Renken, op. cit., n. 61, p. 95.

[128] L. Mann, 'Left to Other Peoples' Devices? A Political Economy Perspective on the Big Data Revolution in Development' (2018) 49 *Development and Change* 3. See also id., p. 95.

[129] Ricaurte, op. cit., n. 93.

[130] Cruz-Santiago, op. cit. (2020a), n. 2. See further Sections 4.2.3 and 4.2.4.

[131] Heeks and Renken, op. cit., n. 61, pp. 95–96, citing F. Gonzalez-Zapata and R. Heeks, 'The Multiple Meanings of Open Government Data: Understanding Different Stakeholders and Their Perspectives' (2015) 32 *Government Information Q.* 441; Johnson, op. cit., n. 44.

[132] Johnson, id.

[133] Gonzalez-Zapata and Heeks, op. cit., n. 131.

[134] Taylor, op. cit., n. 26, p. 10.

[135] Id.

All of these dimensions of the data justice literature are useful for building a framework of labour/data justice. The call to be attentive to experiences and perceptions beyond those of data experts inevitably encompasses workers. The focus on the everyday suggests a spatial shift from technology firms and policy making to the sites of working life. The attention directed at grassroots projects encompasses worker, union, and civil-society initiatives, such as on participatory design, data generation, or the equitable use of data. In the work of the authors, McCann's multidimensional model of UFW, as noted in Section 4.2.1, is designed to enable local policy actors to devise regulatory strategies, which can encompass grassroots approaches,[136] and the interest in small data echoes Cruz-Santiago's work on citizen-led data strategies.[137] The resort to the capabilities approach, furthermore, mirrors a similar theme in the labour regulation literatures over the last two decades, including in the work of Lee and McCann.[138]

The interaction of the data justice and labour regulation literatures is not uni-directional. The insights and preoccupations of labour regulation scholarship can also enrich the data justice debates. Data justice scholarship, for example, is often hitched to an individualistic reading of fundamental rights. Taylor makes this argument, noting that freedoms and needs related to data technologies, such as data protection, informational privacy, and the right to free speech, have been approached through an individual rights framework.[139] This framing presents a problem when it is assumed that redress for infringements of fundamental rights will be pursued by individuals, since many data abuses impact at the collective level.[140]

The data justice literature could benefit from the collective focus characteristic of labour law scholarship. The multidimensional model of UFW, for example, incorporates the collective dimensions of UFW – under 'representation and voice mechanisms' (Dimension 6 – see Figure 1) – to capture working relationships in which rights to freedom of association, organization, and collective bargaining are not respected, or there is a lack of consultation, denial of participation, or failure to establish voice mechanisms.[141] Collective aspects have also been a focus of other labour regulation contributions on digitalization. Information and consultation mechanisms, for example, have been called for when new technologies are introduced,[142] and social dialogue and collective bargaining are central to the 'human-in-command' approach advocated by the European Economic and Social Committee[143] and later endorsed by ILO Global Commission on the

[136] McCann and Fudge, op. cit. (2017), n. 1; McCann and Fudge, op. cit. (2019), n. 1.

[137] Cruz-Santiago, op. cit. (2020a), n. 2.

[138] S. Lee and D. McCann, 'Working Time Capability: Towards Realizing Individual Choice' in *Decent Working Time: New Trends, New Issues*, eds J.-Y. Boulin et al. (2006) 65.

[139] Taylor, op. cit., n. 26, pp. 4, 8.

[140] Taylor highlights some exceptions, such as that the Mexican legal regime on data protection encompasses the family: Taylor, id., p. 8, citing Tribunals Colegiados del Circuito, *Gaceta del Seminario Judicial de la Federación*, Décima Epoca, Tomo II, Libro 20, July 2015, p. 1719, Tesis 11.1o.29 P (10a), Registro 2009626.

[141] McCann and Fudge, op. cit. (2017), n. 1, Table 7.

[142] De Stefano, op. cit., n. 42, p. 4.

[143] European Economic and Social Committee, 'Artificial Intelligence: The Consequences of Artificial Intelligence on the (Digital) Single Market, Production, Consumption, Employment and Society' Own-Initiative Opinion, INT/806, 31 May 2017, OJ C 288, p. 1.

Future of Work[144] and the Organisation for Economic Co-Operation and Development (OECD),[145] and to De Stefano's call to 'negotiate the algorithm'.[146]

4.2.3 | The datafied extension and pursuit of labour rights

The data justice literature helps to clarify two phenomena that were identified in Section 3 as components of labour/regulatory datification: the data dimension of digitalized access to labour rights, and the data-driven assertion and implementation of these rights.

This literature, first, has a particular interest in concerns about the acquisition and use of data in governance projects, such as when the data is derived through surveillance, privacy protections are weak, or data is shared with or sold to commercial firms.[147] In this vein, the data justice literature highlights the work of digital rights groups that advocate for privacy and data protection and tracks citizen resistance to surveillance through the use of counter-surveillance technologies such as encryption or anonymization.[148] The concern about the use of data in state governance projects has had a particular resonance during COVID-19. The era of 'track-and-trace' mobile applications (apps) has triggered considerable unease about the surveillance of private citizens.[149] In Mexico, for example, the civil-society organization (CSO) Red en Defensa de los Derechos Digitales (R3D) has joined with other Latin American CSOs to demand that governments in the region protect human rights in the use of digital technologies during the pandemic.[150]

Yet the data justice literature also spotlights data-driven mechanisms that are used by the state to secure and support human rights. This feature of the literature is, among other things, a riposte to the tendency to treat life with data one-dimensionally as 'necessarily harmful and oppressive'[151] by focusing on establishing just forms of datafication. At the level of state governance, as Rani and Singh note, aggregated data can be effectively used to map outbreaks of disease, for example, or to personalize health services.[152] Aggregation of data related to health, agriculture, and the environment, then, can be beneficial.

Other strands of data justice scholarship focus on citizen-led data practices characterized by data acquisition and use by organized civil-society or non-expert communities and individuals.[153] Brennen and Kreiss highlight one version: social actors using digital 'trace data' to provide real-time feedback.[154] They point to the US CSO MoveOn, which derives feedback from digital

[144] ILO, op. cit., n. 55, pp. 43–44.

[145] OECD, 'Recommendation of the Council on Artificial Intelligence', OECD/LEGAL/0449, 22 May 2019 (calling for a 'human-centric approach'). See De Stefano, op. cit., n. 42, p. 9.

[146] De Stefano, op. cit., n. 20.

[147] Taylor, op. cit., n. 26, pp. 3–4.

[148] Dencik et al., op. cit., n. 46, p. 2.

[149] Taylor et al. (eds), op. cit., n. 2. See also M. Wienroth et al., 'How Public Health Emergencies Have Been Repurposed as Security Threats' *Ada Lovelace Institute Blog*, 16 July 2020, at <https://www.adalovelaceinstitute.org/blog/covid-19-public-health-emergencies-repurposed-as-security-threats/>.

[150] Cruz-Santiago, op. cit. (2020b), n. 2, pp. 185–186.

[151] Kennedy, op. cit., n. 3, p. 20.

[152] Rani and Singh, op. cit., n. 10, pp. 275–276.

[153] Dencik et al., op. cit., n. 61, p. 878; Heeks and Renken, op. cit., n. 61, p. 95.

[154] Brennen and Kreiss, op. cit., n. 7.

analytics on its members' internet use.[155] Kidd offers a contrasting illustration, of indigenous counter-mapping.[156] This element of the data justice literature is also linked to the attentiveness to citizen agency, non-expert knowledge, the local, and small data that was highlighted in Section 4.2.2.[157]

Such insights into the use of data within, to strengthen/reorder, or to resist governance projects can be used to illuminate analyses of labour regulation. For the purposes of this article, the concept of labour/regulatory datafication outlined in Section 2 has been crafted as sufficiently expansive to embrace both resistance to regulatory datafication and datafied engagement with labour laws. As highlighted in Section 3, furthermore, McCann and Fudge's multidimensional model of unacceptable work incorporates the lack of effective legal rights. The 'legal protection' dimension (Dimension 10) encompasses both inadequate implementation/enforcement of legal protections and the lack of information on legal rights.[158] A robust notion of labour/regulatory datafication potentially signals a route to counter these challenges that is consistent with the strategic approach to legal regulation associated with the multidimensional UFW framework.[159]

Digitalized access to labour protections is increasingly being adopted by governments, particularly in the field of social protection. For example, a recent project of extending labour entitlements to domestic workers in Mexico has encompassed a digital dimension. A pilot programme to extend social protection to these workers has facilitated registration through the Mexican social security scheme (ISSA) website and made available a phone app that enables applicants to secure a National Insurance number.[160] The data justice literature highlights that automated systems can exacerbate exclusion and inequality where data is used in the reform of social protection schemes. Park and Humphry's study of the introduction of such systems in social welfare services in Australia found that these systems reinforced exclusionary practices that were already embedded within the welfare framework.[161] Even when efforts were taken to design the system to be inclusive, these were subverted in the process of implementation.[162] Conceptualizing the switch to digitalized systems as an element of the transformation of social protection regimes from in-kind subsidies to cash transfers, Dencik and colleagues argue for a politically embedded view of data, in which 'data is shaped by specific choices that can have multiple, potentially adverse implications for anti-poverty programme recipients'.[163]

The focus in the data justice literature on data produced and managed by workers themselves also prompts an attentiveness to the use of data by citizens to raise awareness of labour rights and identify infractions, or to strengthen the enforcement or implementation of regulatory entitlements, including through the use of small data. Ideas on worker-led data projects are being tested and tracked in labour activism and literatures, including as part of broader digital activism around working life. Mexican unions and non-governmental organizations (NGOs), we have found, are

[155] Id., citing D. Karpf, *The MoveOn Effect: The Unexpected Transformation of American Political Advocacy* (2021).

[156] Kidd, op. cit., n. 94, p. 878.

[157] Heeks and Renken, op. cit., n. 61, p. 95, citing Practical Action, *Technology Justice* (2015) Policy Position Paper, 1.

[158] McCann and Fudge, op. cit. (2017), n. 1, Table 7.

[159] McCann and Fudge, op. cit. (2019), n. 1.

[160] ISSA IMSS Digital Mobile Application, at <https://ww1.issa.int/gp/162556>.

[161] Park and Humphry, op. cit., n. 79, on the Centrelink automated Online Compliance Intervention System and the National Disability Insurance Agency's (Nadia) 'intelligent avatar' interface for users.

[162] Id., pp. 944–948.

[163] Dencik et al., op. cit., n. 61, pp. 877–878.

increasingly reaching workers through social media, notably *WhatsApp*.[164] Globally, the 'platform cooperatives' movement is challenging dominant models of business ownership.[165] In the realm of labour rights, research/impact projects often share an implicit vision that data can empower workers. There is an evolving interest, for example, in using phone apps to track abuses and assert labour rights.[166] Yet a detailed understanding of how data-driven technology or strategies can be used by non-state actors to raise awareness of, assert, and enforce labour rights is only nascent.

The scholarship of one of this article's co-authors illuminates future paths for this element of a labour/data justice research agenda. Schwartz-Marin and Cruz-Santiago investigate citizen-led practices of data collection and analysis, exploring the development of and challenges to citizen-led governance mechanisms around deoxyribonucleic acid (DNA) databases and other forensic technologies in the search of disappeared/missing persons in Mexico and Colombia.[167] Cruz-Santiago highlights the independent collection of forensic data by families of the disappeared (*los desaparecidos*).[168] These families have designed and operationalized their own processes of data identification, collection, analysis,and protection independently of the state to produce knowledge that can locate their loved ones.[169] Cruz-Santiago's work highlights the importance of non-expert knowledge – citizens without technical or formal forensic backgrounds developing strategies and data to find their relatives.[170] Citizen-led data practices are revealed, then, to challenge the role of experts – in this case, forensic scientists.[171] Though mainstream forensic discourses have relegated these practices and data to the realm of 'anecdotes and desperation',[172] Cruz-Santiago regards them instead as alternative, localized modes of forensic knowledge – a 'forensic civism'[173] that is 'a practical response to the unequal distribution of resources, attention, and possibilities for the identification of thousands of disappeared people in Mexico'.[174]

4.2.4 | Methodologies for labour/data justice

Finally, towards methodologies to investigate labour/data justice, the data justice literatures furnish lessons on how researchers should engage with individuals and communities.[175] Drawing on

[164] Discussions with the authors, June 2020.

[165] Dencik et al., op. cit., n. 61, p. 875.

[166] See for example NDWA Labs (National Domestic Workers Alliance), at <https://www.ndwalabs.org/>; WageIndicator *Cost of Living* app, at <https://wageindicator.org/Wageindicatorfoundation/WageIndicatorgazette/2016/you-want-to-know-your-living-wage-then-share-the-cost-of-living-app-in-your-region-or-any-other-region-in-the-world>; *WeClock*, at <https://www.weclock.it/>; S. Burt, 'New Research Will Enable Australians to Better Predict Wage Theft' *The University of Melbourne Newsroom*, 9 February 2021, at <https://about.unimelb.edu.au/newsroom/news/2021/february/new-research-will-enable-australians-to-better-predict-wage-theft>.

[167] Schwartz-Marin and Cruz-Santiago, op. cit., n. 2; Cruz-Santiago, op. cit. (2020a), n. 2.

[168] Cruz-Santiago, id.

[169] Id., p. 364.

[170] Id., p. 351.

[171] Id., p. 360.

[172] Id., p. 350.

[173] Schwartz-Marin and Cruz-Santiago, op. cit., n. 2; E. Schwartz-Marin and A. Cruz-Santiago, 'Pure Corpses, Dangerous Citizens: Transgressing the Boundaries between Experts and Mourners in the Search for the Disappeared in Mexico' (2016) 83 *Social Research: An International Q*. 483.

[174] Cruz-Santiago, op. cit. (2020a), n. 2, p. 365.

[175] Milan and Treré, op. cit., n. 61, p. 323, citing P. Freire, *Pedagogy of the Oppressed* (1968); Costanza-Chock, op. cit., n. 123.

the broader theme of worker agency and the focus on the local level outlined in Section 4.2.2, this literature points to methodological innovations that centre modes and strategies to integrate and empower research participants. This literature is sceptical about conventional research methods. Milan and Treré, for example, call for critical reflection on how we get to learn about datafication and its impact and for the adoption of methods that are more likely to empower research participants.[176] More specifically, they call for an 'engaged' approach to research, in which researchers, wherever possible, involve communities in a process of co-inquiry[177] – a 'novel alliance between "skilled learners" on the ground and academic observers'.[178]

Cruz-Santiago's research is a fruitful contribution towards a methodology of labour/data justice through her investigation of localized citizen-led practices of data collection and engagement in Mexico's and Colombia's humanitarian crises involving the disappeared.[179] In these data practices, research participants govern, manage, and set up research agendas, constructing a governance scenario that challenges state-centric regulatory models and ideas.[180] An ethnography among families of the disappeared and victims of human rights violations has incorporated the co-design of two forensic technologies: a citizen-led Forensic DNA Database and a National Registry of Disappeared Persons.[181] Moving beyond methods that seek to empower research participants, Cruz-Santiago's participatory approach to research builds upon Freire's *Pedagogy of the Oppressed*[182] and participatory action research (PAR) to promote the co-production of knowledge and technologies, where participants are understood as reflective agents who initiate and own the research process.[183] PAR therefore emphasizes collective inquiry and experimentation grounded in experiences and local knowledge.[184] In this way, it challenges the conventionally hierarchical relations between what we conceive of as 'expert ' and 'lay' knowledge.[185]

Similar involvement of workers and their families would be a valuable contribution in future projects on working life, including those that investigate the regulatory dimensions. The ways in which disenfranchised groups of people and victims of human rights abuses have faced systematic opacity and misinformation from authorities regarding forensic information provides a blueprint, not only to develop participatory approaches to data governance but also to create situated forms of data justice. Cruz-Santiago's most recent research project on data justice and multiveillance in Mexico[186] advances an understanding of 'the continuous effort to use the wealth of available

[176] Milan and Treré, id.

[177] Id., citing S. Milan, 'Introduction: Towards an Epistemology of Engaged Research' (2010) 4 *International J. of Communication* 856; C. Milan and S. Milan, 'Involving Communities as Skilled Learners: The STRAP Framework' in *Methodological Reflections on Researching Communication and Social Change*, eds N. Wildermuth and T. Ngomba (2016) 9.

[178] Milan and Treré, id., p. 329.

[179] Cruz-Santiago, op. cit. (2020a), n. 2.

[180] Schwartz-Marin and Cruz-Santiago, op. cit., n. 2. See also Cruz-Santiago, id.

[181] Schwartz-Marin and Cruz-Santiago, id.; E. Schwartz-Marin and A. Cruz-Santiago, 'Antígona y su biobanco de ADN: desaparecidos, búsqueda y technologías forenses en México' (2018) 18 *Athenea Digital* 129.

[182] Freire, op. cit., n. 175.

[183] Cruz-Santiago, op. cit. (2020a), n. 2, pp. 352–353, citing S. Kindon et al., *Participatory Action Research Approaches and Methods: Connecting People, Participation and Place* (2007) 14.

[184] Cruz-Santiago, id., p. 353.

[185] Id., p. 352, citing Kindon et al., op. cit., n. 183, p. 10.

[186] E. Schwartz-Marin et al., *Data Justice in Mexico's Multiveillant Society: How Big Data Is Reshaping the Struggle for Human Rights and Political Freedoms* (2018), at <https://gtr.ukri.org/projects?ref=ES%2FR009945%2F1>. The project was funded by the UK Economic and Social Research Council. See also Cruz-Santiago et al., op. cit., n. 2.

data to promote personal and collective freedoms, taking into account the particular forms of oppression and inequality that shape our world'.[187]

In practice, this means looking attentively to the ways in which technologies such as mobile apps, websites, and surveillance mechanisms are developed, and the values and power dynamics that are crystallized in their design and programming. An example is the mobile app *Dignas* ('decent', from 'decent work' in Spanish).[188] The app, launched in 2020, was developed by NGOs as part of a research collaboration between academics in Mexico, Ecuador, and Colombia. Its aim is to inform domestic workers of their labour rights and responsibilities. The app incorporates a directory of legal resources and a 'labour rights calculator' that domestic workers can use to track their employment history, calculate their entitlement to vacation days, and determine the amounts that they are owed on termination of employment.[189]

The next steps in data justice design would be to analyse how innovative South–South cooperation has been able to advocate for the implementation of labour standards and to explore whether a similar (or complementary) mobile app can be developed to support effective access to data autonomy/privacy for users. Ideally, these technologies would be developed in workshops through dialogue between workers and local partners. When coupled with the UFW regulatory framework, insights born from participatory research can provide empirical feedback to regulatory processes, which otherwise might lack the granularity, sensitivity, and voices of less visible members of society to address forms of inequality that are programmed into technologies.

5 | CONCLUSION

This article strives towards a model of labour/data justice that both captures the risk of the deterioration of working life at the labour/data nexus and encompasses datafied strategies towards the effective regulation of working life. The argument that we have pursued is that the data justice literatures are valuable to developing such a conception of labour/data justice, and an associated research agenda, through a set of interlinked ontological, epistemological, and methodological contributions.

The article has highlighted the merits of datafication as a mode of conceptualizing the transformation of contemporary working life. It has proposed a notion of labour/regulatory datafication that encapsulates both the datafication of working life and datafied strategies to secure labour rights, contributing to evolving ideas on improving working life through data-led methods. In Section 3, we examined the key processes of labour/regulatory datafication through the paradigm of McCann and Fudge's multidimensional model of UFW, thus centring the analysis on how datafication risks generating unacceptable work across a range of dimensions while also refining the multidimensional model. We then turned, in Section 4, to the literature on data justice,

[187] Schwartz-Marin et al., id. As part of this project, for instance, the team conducted a series of interviews and workshops in Mexico City in 2021 to develop an app, *Femjambre*, that focuses on mobility. Domestic workers and other women commuting in Mexico City can use the app to travel together and improve their safety and visibility: see *Data Justice in Mexico*, at <https://datajustice.mx/>.

[188] Centro Nacional para la Capacitacion Profesional y Liderazgo de las Empleadas del Hogar AC, 'Conoce Dignas, la app asistente para trabajadoras del hogar' *CACEH*, 19 November 2020, at <https://caceh.org.mx/2020/11/19/conoce-dignas-la-app-asistente-para-trabajadoras-del-hogar/>.

[189] *Google Play*, 'Dignas: asistente para trabaja' *Google Play*, at <https://play.google.com/store/apps/details?id=org.caceh.dignas>.

to unearth features pertinent to a labour/data justice framework. Prominent among these dimensions, as outlined in Section 4.2, are the global perspective of the data justice literatures, including the particular focus on the Global South; the centring of agency, incorporating an awareness of the experience and views of non-experts, attentiveness to the everyday, a localized approach, a focus on small data, and a resort to the capabilities framework to conceptualize justice; an interest in the datafied extension and pursuit of labour rights, including by non-expert citizens; and methodological approaches and strategies that focus on co-production and supporting the agency of the research participants.

Further research is needed to strengthen the notion of labour/data justice, thereby enriching the literatures on both data justice and labour regulation. Empirical research could usefully centre on data-led projects in the Global South, with a particular focus on the datafied labour/regulatory strategies of non-expert citizens. Some ideas can be suggested for meaningful research agendas. First, research projects should reach beyond platform work, including by adopting cross-sectoral approaches. In this regard, the investigation of female-dominated occupations, including care and domestic work, would be welcome. In the current global context, research projects could have a particular focus on the lingering effects of the use of digital technologies during COVID-19 and in post-pandemic labour markets. Finally, in the wake of the pandemic's intricate and confounding challenges for the governance of working life, research could investigate whether labour/data justice strategies can be used by diverse social actors to establish, sustain, and benefit from effective labour-regulatory frameworks.

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