# A Judge Over Your Mechanical Shoulder: The role of judicial review in shaping algorithmic bureaucracies

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# Abstract

There is an increasingly rich emergent discourse at the intersection of administrative law and automated decision-making. Outside the context of automated decision-making, the relationship between judicial review and the intricate bureaucratic workings of administrative institutions in the United Kingdom has been the subject of empirical 'impact studies'. To date, however, a central question that draws together these two fields has been neglected: what impact can judicial review have on the operation of automated administration? This thesis argues that the evolution of public administration in the UK towards 'algorithmic bureaucracy' should prompt us to revisit the question of what impact judicial review has, and can have, on bureaucracy. The change in the administrative environment raises questions as to whether previously identified limitations and factors recognised in judicial review impact studies conducted in non-automated or 'street-level' bureaucratic environments continue to apply in the same way in increasingly 'system-level' or 'algorithmic' bureaucracies. By situating the discussion in the context of social security in the UK, and its increasingly automated administrative environment, this thesis argues that the dynamics that are at play when judicial review influences the machines of government are shifting, due to the evolving nature of administration.

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## Declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for an award at this, or any other, university. All sources are acknowledged as references.


## Acknowledgments

I would like to thank my supervisor Professor Joe Tomlinson for his invaluable advice and endless patience; Carla Clarke, without whose support to create the time and space I needed to complete this research, it would not have been possible; and the members of the Welfare Rights & Advice team at Child Poverty Action Group in London for their generosity with their time and expertise in everything they do.

# I: Introduction

The use of automated decision-making and algorithmic systems in public administration in the United Kingdom has increased significantly over recent years. Automated systems now play a growing role in the delivery of public services and uses of these systems in the public sector are becoming progressively widespread and varied. In different degrees, central government departments have put them to use in large-scale, high-volume operations in the fields of - to name but a few - social security, immigration and tax. In social security, automated algorithmic processes have replaced manual systems previously used to assess and administer means-tested working age benefits. The Department for Work and Pensions' digital universal credit (or 'UC') system now serves over 5.6 million claimants and, indirectly, their dependent children.[1]

At the most basic level, an 'algorithmic system' comprises a finite number of steps or instructions that are followed, to reach an outcome. The term 'automated decision-making' is used broadly in this thesis, to include decision-making that contains elements of human involvement (discussed further in section II). It is also used broadly so as to include the automation of rules-based processes, in addition to those which aim to 'augment' decision-making through use of more complex statistical methods or machine learning techniques.[2]

The discipline of public law is already engaged with automation as a feature of public administration. Potential issues which have been identified and discussed include algorithmic unfairness, lack of transparency, the permissibility of the use of individuals' data for particular purposes under data protection law, unlawful discrimination in biased systems, implications for discretion and the role of private sector actors.[3] More specifically, the application of judicial review grounds to automated decision-making has been considered and the need for further research in this area identified,[4] and it has been argued that traditional administrative law principles potentially offer a holistic and practical framework for ensuring accountability in socio-technical processes which involve automated decision-making systems.[5]

The interaction between public law and automated decision-making systems in the UK has not been limited to academic discourse: judges are starting to be called upon to grapple with some of the issues in the

[1] Department for Work and Pensions, *Universal Credit statistics: 29 April 2013 to 14 April 2022* (17 May 2022) <https://www.gov.uk/government/statistics/universal-credit-statistics-29-april-2013-to-14-april-2022/universal-credit-statistics-29-april-2013-to-14-april-2022> last accessed 30 July 2022.

[2] For a discussion of 'automation' and 'augmentation' see Michael Veale and Irina Brass, 'Administration by Algorithm? Public Management Meets Public Sector Machine Learning', in Karen Yeung, and Martin Lodge (eds), Algorithmic Regulation (OUP 2019).

[3] Paul Daly, Jennifer Raso and Joe Tomlinson, 'Administrative Law in the Digital World' forthcoming in Carol Harlow (ed), *Research Handbook on Administrative Law* (Edward Elgar 2021).

[4] Jennifer Cobbe, 'Administrative Law and the Machines of Government: Judicial Review of Automated Public-Sector Decision-Making' (2019) 39 Legal Studies 636.

[5] Jennifer Cobbe, Michelle Seng Ah Lee, Jatinder Singh, 'Reviewable Automated Decision-Making: A Framework for Accountable Algorithmic Systems' (FAccT '21: Proceedings of the 2021 ACM Conference on Fairness, Accountability and Transparency, Virtual Event Canada, ACM, March 2021, 598) <https://dl.acm.org/doi/10.1145/3442188.3445921>.

course of deciding judicial review challenges brought on behalf of individuals affected by such systems.[6] In other cases, judicial review challenges relating to automated systems have concluded at an early stage, without receiving judicial consideration.[7] The emergence of judicial review challenges relating to automated decision-making systems is not limited to one area of government. In the field of immigration, for instance, a challenge to the 'streaming tool' used by the UK Visa & Immigration section of the Home Office to categorise visa applications into 'Red', 'Amber' and 'Green' categories, based on their perceived level of risk, concluded at an early stage.[8] The challenge, brought by the Joint Council for the Welfare of Immigrants, working with the not-for-profit organisation Foxglove, was conceded with the Home Office discontinuing its use of the tool in August 2020, pending a redesign of the process. Within the education sector, threats of judicial review proceedings were made in pre-action correspondence in respect of the process used to allocate GCSE, AS, A-level and BTEC results in 2020, which had an algorithmic standardisation model at the heart of it, following public outcry.[9] On that occasion, the exam regulator's continued reliance on the grading algorithm was abandoned after it became politically unsustainable. As such, legal arguments made on behalf of the proposed claimant (an A-level student whose grades had been decided by the algorithm) that the process was *ultra vires*, irrational, breached data protection legislation, was unlawfully discriminatory and breached public law procedural requirements (including breach of the Public Sector Equality Duty, a failure to consult and a failure to comply with published policy) were not tested in the courts.[10] The area of welfare benefits administration is no exception to this trend of judicial review engaging with automated decision-making systems. One case in this domain saw a unanimous Court of Appeal in *Johnson*[11] find that an aspect of the universal credit system, that disadvantaged recipients of the benefit who received their monthly wages from their employers slightly early or late due to how weekends or bank holidays fell, was irrational, notwithstanding evidence from the Secretary of State for Work and Pensions on the importance of automation in the system and the need for

[6] For example, see *R (Bridges) v Chief Constable of South Wales Police & ors* [2020] EWCA Civ 1058, [2020] 1 WLR 5037. In this case the lawfulness of the use of automated facial recognition technology by South Wales Police came under scrutiny. The Court of Appeal found there had been a breach of the claimant's right to privacy under Article 8 of the European Convention on Human Rights on account of an insufficiently clear legal framework covering its use, in addition to identifying deficiencies in the police's Data Protection Impact Assessment required under data protection legislation and shortfalls in the steps taken by the police force to fulfil its Public Sector Equality Duty.

[7] This is not unique to judicial review challenges of automated systems. For example see: Varda Bondy and Maurice Sunkin, 'The Dynamics of Judicial Review Litigation: The resolution of public law challenges before final hearing' (Public Law Project 2009).

[8] Jack Maxwell and Joe Tomlinson, *Experiments in Automating Immigration Systems* (Bristol University Press 2022), 50-73.

[9] Daan Kolkman, '"F**k the algorithm"?: What the world can learn from the UK's A-level grading fiasco' (26 August 2020) <https://blogs.lse.ac.uk/impactofsocialsciences/2020/08/26/fk-the-algorithm-what-the-world-can-learn-from-the-uks-a-level-grading-fiasco/> last accessed 30 July 2022; Jeni Tennison 'How does Ofqual's grading algorithm work?' (16 August 2020) <https://rpubs.com/JeniT/ofqual-algorithm> last accessed 30 July 2022.

[10] Foxglove Legal, 'We put a stop to the A Level grading algorithm!' (17 August 2020) <https://www.foxglove.org.uk/2020/08/17/we-put-a-stop-to-the-a-level-grading-algorithm/> last accessed 30 July 2022.

[11] *Secretary of State for Work and Pensions v Johnson & ors* [2020] EWCA Civ 788, [2020] PTSR 1872 ('*Johnson* CA'); see also *R (Pantellerisco & ors) v Secretary of State for Work and Pensions* [2021] EWCA Civ 1454, [2020] PTSR 1922 (application for permission to appeal to the Supreme Court pending at the time of writing, case reference UKSC 2021/0227). The *Johnson* case is discussed in Jed Meers, 'Fatally Upsetting the Computer': Universal Credit, Earned Income, and the Demands of Automation' (2020) Journal of Social Welfare and Family Law 42 520.

ongoing 'manual interventions' or alternatively a 'complete rebuild' of the universal credit calculator to resolve the problems faced by the claimants.[12]

Despite the increasingly in-depth thought and practice emerging at the intersection of administrative law and automated decision-making, a central question has been neglected: what *impact* can judicial review have on the operation of automated administration? Outside the context of automated decision-making, the relationship between judicial review and the complex bureaucratic workings of administrative institutions in the UK has been the subject of 'impact studies', albeit arguably surprisingly few and far between given the import attributed to judicial review as a part of good governance. In the literature that does exist, a central theme is the limitations of the impact of judicial review on routine (non-automated) decision-making in administrative bureaucracies.[13] It is in this context that the question arises as to whether such previously identified limitations apply equally to automated decision-making or whether, alternatively, the shift away from the role of the 'street-level bureaucrat'[14] in public administration in the UK to 'system-level bureaucracies' or 'algorithmic bureaucracies' brings with it a shift for the role of judicial review in influencing the machines of government.[15] To date, this question has not been asked.

To this end, the central question which this project seeks to theorise - for the first time - is whether the increase in automation in public administration changes the capacity of judicial review litigation to influence administrative decision-making processes.[16] To answer this question, it is necessary first to consider how the form of administration in the UK has evolved toward one which makes significant use of automation and algorithmic technologies (section II).[17] Situating this development in the context of social security

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[12] *Johnson* CA, [77]-[91].

[13] Marc Hertogh and Simon Halliday (eds), *Judicial Review and Bureaucratic Impact: International and Interdisciplinary Perspectives* (CUP 2004).

[14] This concept was first explored by Michael Lipsky in relation to police officers, teachers and lower-court judges (Michael Lipsky, *Toward a Theory of Street-Level Bureaucracy* (University of Wisconsin 1969)). It was developed against the backdrop of fallout from the civil rights movement in the United States and the then relatively recent introduction of race anti-discrimination laws. The role of the street-level bureaucrat is extensively explored by Lipsky in Michael Lipsky, *Street-level Bureaucracy: Dilemmas of the individual in public services* (30th anniversary edn, Russell Sage Foundation 2010).

[15] Mark Bovens and Stavros Zouridis, 'From Street-Level to System-Level Bureaucracies: How Information and Communication Technology Is Transforming Administrative Discretion and Constitutional Control' (2002) Public Administration Review 62 174. The concept of 'algorithmic bureaucracy' is also used by Vogl and others in Thomas M Vogl, Cathrine Seidelin, Bharath Ganesh and Jonathan Bright, 'Algorithmic Bureaucracy: Managing Competence, Complexity, and Problem Solving in the Age of Artificial Intelligence' (Proceedings of dg.o 2019: 20th Annual International Conference on Digital Government Research, Dubai, ACM, June 2019, 148). <https://dl.acm.org/doi/10.1145/3325112.3325240> and by the same authors in 'Smart Technology and the Emergence of Algorithmic Bureaucracy: Artificial Intelligence in UK Local Authorities' (2020) Public Administration Review 80 946.

[16] The term 'judicial review litigation' is used deliberately and is intended to include pre-action stages and processes which do not result in a final judgment, including settlement.

[17] The reference to administration is to the UK given that many of the developments in administration are relevant across the four nations. In respect of judicial review litigation, this thesis is focused on England & Wales, though it may

administration will provide us with a deeper understanding of what an algorithmic bureaucracy can entail and provide an illustration of the shifting nature, *vis à vis* traditional administrative models, of the bureaucratic environment on which judicial review might impact (section III). The administration of welfare benefits is a suitable starting point for this new endeavour of theorising the role of judicial review in highly automated decision-making environments as it represents a high-volume administrative decision-making field with now highly digitised and automated aspects to it, in particular as a result of the roll out of universal credit across the UK. The emergence of the 'digital welfare state', as it is frequently termed, has been extensively recognised as an area that comes with risks to human rights and non-discrimination principles.[18] Social security administration has also proven itself to be fertile ground for judicial review impact studies previously, prior to the advent of algorithmic bureaucracy.[19] Through exploration of the *Johnson* universal credit case, this thesis will analyse whether there is a changing role for judicial review challenges in relation to both formal reactions by public bodies and the structuring[20] of administrative decision-making processes in the context of automated systems, as compared to 'traditional' human decision-making environments (section IV).

The central argument of this thesis is that the dynamics of how judicial review impacts on bureaucracies is shifting, and will continue to shift, as a result of the move in administration towards algorithmic bureaucracy. With regard to the previously identified limitations of the impact of judicial review on administrative decision-making in traditional decision-making environments, this thesis argues that the relationship has the potential to play out differently in the context of automated decision-making systems. Ultimately, the question of whether judicial review is more or less effective at influencing bureaucracies as a result of these changing dynamics is essentially an empirical one, and cannot be answered within the scope of this thesis. The extent to which judicial review influences algorithmic bureaucracies in future will also depend on developments in the approaches taken by the courts when reviewing automated decision-making and external factors such as developments in the underlying technologies. But, by highlighting the unique factors at play in the impact of judicial review in the context of algorithmic bureaucracies and how it might differ from judicial review in the environments in which impact studies have been conducted to date, this thesis lays the groundwork for subsequent empirical study of the issues in practice.

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be the case that in jurisdictions where similarities have previously been recognised in judicial review impact studies, they continue to be relevant.

[18] For example see Philip Alston, *Extreme Poverty and Human Rights, Note by the Secretary-General* (A/74/493, United Nations 2019).

[19] For example see Tony Prosser, *Test Cases for the Poor: Legal Techniques in the Politics of Social Welfare* (Child Poverty Action Group 1981); Trevor Buck 'Judicial Review and the Discretionary Social Fund' in Trevor Buck (ed.) *Judicial Review and Social Welfare* (Pinter 1998).

[20] The term 'structure' is intended to refer to the exercise of making explicit values which are to guide decision-making and affect day-to-day administration by the exercise of prior control. However, regard will also be had to the role of judicial review in 'directing' and 'limiting' specific practices of automated decision-making (David Feldman, 'Judicial review: A way of controlling government?' (1988) Public Administration 66 21).

It is important to recognise the limits of what conclusions can be drawn from in-depth exploration of one case, drawn from a single bureaucratic sector. Acknowledging the specificities of decision-making processes in different administrative organisations and contexts will form part of defining those limits. Further, the realities of judicial review litigation in terms of what challenges get brought, in what way and how they are responded to by public bodies are influenced by numerous factors such as funding and resource availability, circumstances of individuals, and political and social environments at macro-, meso- and even micro-levels.[21] Whilst the influence of these variations cannot be fully expounded without context-specific empirical study, their existence can be noted and conclusions adjusted accordingly, with care taken as to the extent that causation is inferred. Whilst this thesis does not claim to provide a comprehensive answer to the question of *how* judicial review impacts on algorithmic bureaucracy, it hopes to pave a path toward subsequent empirical research that might provide fuller answers.

[21] See, for example, Lisa Vanhala and Jacqueline Kinghan, 'Using the Law for Social Change: A Landscape Review' (Working Paper No. 4, The Baring Foundation 2018); Lisa Vanhala and Jacqueline Kinghan, 'The 'madness' of accessing justice: legal mobilisation, welfare benefits and empowerment' (2022) Journal of Social Welfare and Family Law, 44 22.

# II: Changing modalities of administration – the evolution of public administration in the UK towards algorithmic bureaucracy

There have been a number of attempts to describe various stages in the evolution of public administration as 'paradigm shifts'.[22] It is not necessary for present purposes to delineate exactly when or whether these developments should be conceptualised as such, nor to suggest that each stage involved a wholesale change and abandonment of the features of its predecessors. It is relevant, however, to consider whether the advent of automated decision-making constitutes a substantial change *vis à vis* the models of administration previously observed in judicial review impact studies (discussed further in section IV) and if so, how, that shift might have consequences for the ways in which administrative law accountability mechanisms - in particular judicial review - interact with, and impact upon, bureaucratic behaviour.[23]

The early modern state operated via a 'traditional' administrative model which is commonly termed 'Weberian' bureaucracy. For Weber, writing in the first two decades of the 20th Century, bureaucracies represent one of the myriad of rationalisation processes occurring across disparate 'spheres of life' in Western societies. Administrative bureaucracy is an expression of the modern state through one of the three types of legitimate authority or domination (*herrschaft*) identified by Weber; namely, legal-rational authority.[24] This type of legitimate authority had come to be the dominant form of authority in modern societies, displacing 'traditional' and 'charismatic' authority. Bureaucracy can be understood as a manifestation of formal rationality (*zweckrationalität*), and the institutionalisation of this type of means-end rational action.[25] Extensive and careful work has been done to faithfully interpret Weber's original analytical framework as applied to bureaucracy, but it has also been suggested that common usage of the term 'Weberian' bureaucracy today denotes a simplification of, or extrapolation from, Weber's original analysis.[26] Details of that discussion

[22] For example, Helen Margetts and Patrick Dunleavy, 'The Second Wave of Digital-Era Governance: a Quasi-Paradigm for Government on the Web' (2013) Phil Trans R Soc A 371.

[23] The UK is not alone in moving towards a higher degree of automation within public administration. Other countries may well be further along in their parallel, though differing, journeys in this area - as early as the 1970's a computerised wage matching system designed to check benefit claimant's self-declared income against electronic files and agency data was in operation in the United States. Further non-recent examples are not hard to find: in 2004 the Australian Administrative Review Council identified 11 commonwealth agencies using rules-based 'expert systems', some of which had been in use since the early to mid-1990s. More recently, experimental automated decision-making has been in development in Canadian immigration agencies since at least 2014. Whilst these jurisdictions may offer fertile ground for others to carry out comparative analysis in relation to judicial and regulatory treatment of automated decision-making in the public sector, the specificities of the UK's public institutions, professional civil service, courts and tribunal systems and constitutional terrain mean that the focus of this chapter, and the present enquiry as a whole, must be squarely on the UK.

[24] For an in-depth discussion of *herrschaft* see Stefan Breuer (tr Lawerence Scaff) 'The Relevance of Weber's Conception and Typology of Herrschaft' in *The Oxford Handbook of Max Weber* (eds Edith Hanke, Lawrence Scaff and Sam Whimster) (OUP 2019).

[25] For a more in-depth discussion of Weber's typology of rationality, see Stephen Kalberg, 'Max Weber's Types of Rationality: Cornerstones for the Analysis of Rationalization Processes in History' (1980) The American Journal of Sociology 85 1145.

[26] For example, see Harro M Hopfl, 'Post-bureaucracy and Weber's "modern" bureaucrat' (2006) Journal of Organisation Change Management 19 8.

are outside the scope of this thesis: suffice to say for our present purposes, the term is now typically used to refer to the rule-based and legalistic nature of bureaucracy. A 'Weberian' bureaucracy is typically viewed as hierarchical and formalised in its organisational nature, with non-political professionalism at its core. It is associated with impersonal procedures, universalism, procedural correctness, and administrative efficiency. The metaphor of an 'iron cage' is often used to describe the constraining nature and restriction on freedom that the calculability and predictability of a bureaucracy with these features entails.

Moving beyond 'Weberian' bureacracy, the emergence of the 'New Public Management' era or 'NPM' in the UK from the late 1970s and early 1980s onwards signified a displacement of the 'traditional' administrative models. NPM was dominated by concurrent drives for efficiency, effectiveness and cost-saving in the public sector. Mechanisms to streamline or 'trim the fat' in public administration were introduced.[27] These drives supported an overarching philosophy which later came to be characterised as a belief that 'formal state machinery should be engaged in steering rather than rowing'.[28] This conceptualised the role of the state as a catalyst to achieving its objectives, rather than the public sector doing all the legwork itself. As part of NPM in the UK, the disaggregation of central government through 'agentification' was pursued.[29] The reform programme aimed to redistribute three-quarters of civil servants into newly created arms-length executive agencies, such as the Vehicle Inspectorate, Companies House, the UK Passport Agency and the Employment Service. The idea of these autonomous agencies was that they would have a degree of separation from ministers and senior officials, with a view to allowing the latter to focus on policy, whilst the agencies focused on the efficient delivery of services which represented good value for public expenditure.[30]

NPM involved an increased role for the private sector in the delivery of public services. In part, this was motivated by the desire to replicate the competitive market forces which operate in the private sector amongst the potential pool of third party suppliers and providers of public services. By introducing a competitive environment, it was hoped that this would help drive up the standard of delivery in public services and result in service provision which represented value for taxpayers' money.[31] The extensive 'contracting

[27] The Efficiency Unit - established shortly after Margaret Thatcher came to power in 1979 - was one such route through which the government hoped to achieve cuts in public spending. The Unit scrutinised the systems and processes of government departments for wastefulness and identified targets for money-saving exercises within the departments, as well as reviewing the systems that departments had in place for financial accounting and managerial responsibility.

[28] David Osbourne and Ted Gaebler, *Reinventing Government: How the Entrepreneurial Spirits is Transforming the Public Sector* (Plume 1992).

[29] The programme of agentification was introduced through Next Steps initiative, a programme which was launched by the Thatcher government in following her third re-election in 1987. A report commissioned by the Efficiency Unit proposed this ambitious programme of public management reforms which continued throughout John Major's administration.

[30] Nehal Panchamia and Peter Thomas, 'Civil Service Reform in the Real World: Patterns of Success in UK Civil Service Reform' (Institute for Government 2014), 28 <www.instituteforgovernment.org.uk/publications/civil-service-reform-real-world> last accessed 17 June 2022.

[31] The focus on service improvement also came with an increased prioritisation of providing good 'customer' service. This was underpinned by policy statements such as the Citizen's Charter - launched by John Major in 1991 - which

out' of services to private companies led to a change in the processes involved in deciding how spending was allocated, as previously hierarchical processes were replaced by competitive tendering and new procurement processes.[32] There was also an adoption of management culture and organisational practices taken from the world of business. Practices such as performance incentivisation and performance-related pay were used to manage civil servants; tactics not seen under the 'trust model' of the earlier iteration of the civil service with its high reliance on mutuality.[33] Similarly, goal-oriented incentivisation mechanisms were introduced at an organisational level as well as at an individual level, and performance-related economic motivators were a feature of contractual relationships, not only with private sector partners but also between distinct public bodies. It is generally recognised that, with an increasingly managerialist approach, senior bureaucrats gained more freedoms and discretion within a greater 'managerial space' and that, with this, the degree of direct and immediate control over operational matters by politicians lessened. However, Hood has argued that this 'managerial freedom' came with a flip side: an inherent paradox in managerialism is that any reduction of traditional bureaucratic controls that it brought about came with an accompanying 'mirror dance' or equilibristic increase of process rules and regulatory mechanisms.[34] Harlow and Rawlings would later characterise this phenomenon as an increase in proceduralism.[35]

By the turn of the millennium, discussion of 'e-government' as a feature of UK administration was becoming more prevalent. As this form of digital administration evolved further, into what has been termed 'Digital-era Government' (DEG) and subsequently Essentially Digital Government (EDGE), this was seen as

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gave more prominence to the perspective of the individual citizens interacting with public services. The Citizen's Charter centred service users and recognised that public services had to be responsive to users' needs. A core idea of the Charter was the setting of minimum standards of service provision which users could expect to receive, which were codified through individual charters for different services, and which represented a sort of contract between the public and providers (Public Administration Committee, *Twelfth Report* (HC 2007-2008) ch 2). Although the effectiveness of the Citizen's Charter at achieving its aims can be queried, no doubt partly as a result of the breadth of its objectives and the absence of tangible, legally enforceable rights under it, it has nonetheless been viewed as having had a lasting impact on attitudes - both of citizens and providers - towards public services, with the interests of service users remaining a relevant policy consideration in subsequent administrative models.

[32] One such procurement approach is the private finance initiative (PFI), initially implemented under John Major but continued and expanded upon by New Labour, which introduced a new type of public-private partnership aimed at funding - or, more accurately, financing - major new public infrastructure, such as hospitals, prisons, schools and roads. PFI sought to keep public debt levels down through long-term contracting with special purpose vehicle (SPV) for the provision of services, with the capital investment usually being raised by a consortium of companies (co-owners of the SPV) who would design, build and then operate services out of the physical asset.

[33] Hugh Heclo and Aaron Wildavsky *The Private Government of Public Money: community and policy inside British politics* (Macmillan 1974). This was not the first appearance of these incentive mechanisms in the history of the British public service; performance pay had been used to reward tax collectors until the 1930s and, prior to that, school teachers until the turn of 20th century (Christopher Hood, Colin Scott, Oliver James, George Jones and Tony Travers, *Regulation Inside Government: Waste-Watchers, Quality Police, and Sleazebusters* (OUP 1999), 192).

[34] Christopher Hood, 'Paradoxes of public-sector managerialism, old public management and public service bargains' (2000) International Public Management Journal 3 1.

[35] Carol Harlow and Richard Rawlings, 'Proceduralism and Automation' in Elizabeth Fisher, Jeff King and Alison L Young (eds) *The Foundations and Future of Public Law: Essays in Honour of Paul Craig* (OUP 2020).

representing an end to the previous form of NPM.[36] Increased use of digital tools in administration could be seen both in how government interacted with the rest of society, including the means by which public services are delivered, and also within its own internal operations.[37] Dedicated units had specific responsibility for the use of 'ICT' within government.[38] One of the many government strategy documents to talk about technological 'transformation' around that time acknowledged the limitations of the progress made on digitisation, as many back-end systems remained paper-based and staff intensive, to the extent that even those which involved an individual member of the public completing an online digital application were translated into paper form once received, before they could be processed.[39] The main internal operational priorities of this 'transformation' strategy, and other iterations which preceded and followed it, were to reduce duplication of systems, streamline processes and encourage the standardisation of services so that infrastructure could be shared across government. As such, the automation of certain aspects of back-end functions which might more commonly be characterised as involving decision-making remains manual, and carried out by human agents. Largely, actions which might plausibly involve decisions which are subsequently subjected to internal review, administrative appeal or judicial review, were therefore not at the forefront of flagship UK government digital programmes in the first decade of the 21st Century and would come later. Nonetheless, it is interesting that legacy systems were negatively perceived as being 'structured around…the underlying legislation' which prohibited a better 'customer' experience.[40] This comment was perhaps prescient of some of the difficulties which have since arisen when digitalising and automating rights-based systems such as social security systems, in ways which do not always map precisely onto the underlying legal structure.[41]

Forms of administration do not remain static over time. Over recent decades there has been significant and ongoing technological expansion, in various guides, in the UK's public sector. At the same time, there are undoubtedly areas where more 'traditional', non-digital administrative environments remain prevalent: there are others where systems involve extensively digitised processes but retain fundamentally manual, human

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[36] Patrick Dunleavy, Helen Margetts, Simon Bastow and Jane Tinkler, 'New Public Management Is Dead - Long Live Digital-Era Governance' (2006) Journal of Public Administration Research and Theory 16 467. It can also be viewed as a continuation of a wider programme of modernisation in which the themes of achieving 'value' for 'consumers' and of increased efficiency continued, with technology as the new tool to improve performance (see: John Morison 'Modernising Government and the E-Government Revolution: Technologies of Government and Technologies of Democracy' in Nicholas Bamforth and Peter Leyland (eds), *Public Law in a Multi-Layered Constitution* (Hart Publishing 2003).

[37] Christopher Hood and Helen Margetts, *The Tools of Government in the Digital Age* (Palgrave Macmillan 2007).

[38] The e-Government Unit was launched by Tony Blair in 2004 with an emphasis on administrative efficiency of public services and transforming service delivery through use of ICT by the public sector (Cabinet Office, *From E-Envoy to E-Government* (press release 026/0425, 2004). This unit replaced the Office of the e-Envoy, a team established in 1999 and responsible for UKonline. This was an early version of the government's portal website which, at that time, was used largely for public information provision and hosting a small number of online or partially online services for the public.

[39] Cabinet Office, *Transformational Government: Enabled by Technology* (Cm 6683, 2005).

[40] ibid, 4-5.

[41] For examples of 'mismatches' of this kind see: Lynsey Dalton and Sophie Howes, *Universal credit and access to justice: applying the law automatically* (Child Poverty Action Group 2021).

decision-making at their core, within that wider digital system. As a general observation on the role of new technologies in the public sector in recent decades, there is much that could be said about the pace of developments. References to 'transformation' have been deployed at almost every stage along the way, both by the proponents of organisational changes and by observers after the event. Whether that pace is perceived as being faster or slower than might have been expected is a matter of perspective.[42] Nonetheless, automation in public administration has emerged alongside recent advances in technology and has been recognised by some as advancing relatively rapidly.[43] Successive governments have been eager to position the UK as a world leader in digital government. We have now reached the stage where it is possible to identify significant examples of the use of algorithmic decision-making systems, artificial intelligence and data-driven technologies in various tentacles of the administrative state. For present purposes, it is not necessary to establish how quickly or slowly this rollout has occurred, nor the reasons why some expectations might not have yet been met, where others have been exceeded. Rather it will be enough to recognise that central government departments and other public sector organisations have, over time, expanded and evolved their digital offering on a large scale, to the extent that it is now a notable feature of a current form of administration, and one to which we can now turn to consider in more detail.

On the 30th anniversary of his seminal exploration of public administration in 'Street-Level Bureaucracy', Lipsky himself identified the further automation and systemisation of interactions between government employees and citizens, as one option for the direction of travel of public administration, though not necessarily his preferred one.[44] By this time, however, some governments were already moving toward this operating model. Early in the 21st Century there was an emerging recognition of a shift in large-scale executive agencies in Western Europe towards what could be termed 'system-level bureaucracy'; a model of administration characterised by 'ICT' (now a relatively antiquated term) playing a central decision-making role, with a limited role for humans in individual cases and a minimisation of executive discretion. As Bovens and Zouridis observed in 2002:

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[42] Even if the speed of developments could be measured relative to the speed of technological advances external to the context of the UK public sector, any such commentary would in addition require acknowledgment of the numerous political, economic and societal factors, which might have arguably influenced the pace at which available technologies have become, and continue to be, embedded in administration. It is conceivable that changing priorities of successive governments, alongside the global financial crisis of 2008, its implications for the UK's economy through its sizeable financial and property sectors and the decade-long austerity programme that followed, had an impact on how and where technology has been deployed in the public sector, even before the unique circumstances of the coronavirus pandemic came about in 2020.

[43] One indicator of this is the acknowledgement of the 'explosion in automated public administration' in Carol Harlow and Richard Rawlings, *Law and Administration* (4th edn, Cambridge University Press 2021) which sits within a newly introduced section entitled 'robotic decision-making', which was not present in the 3rd edition published in 2009.

[44] Michael Lipsky, *Street-level Bureaucracy: Dilemmas of the individual in public services* (30th anniversary edn, Russell Sage Foundation 2010).

> Instead of noisy, disorganized decision-making factories populated by fickle officials, many of these executive agencies are fast becoming quiet information refineries, in which nearly all decisions are pre-programmed by algorithms and digital decision trees.[45]

Similar large-scale developments could begin to be seen in the UK. Around this time, an overhaul of the welfare benefits system which, by design, would only be made possible by a planned new IT system to underpin it and with automation as a central design principle - and to which I will return later - became more than a germ of an idea.[46] Such changes in various parts of the public sector, taken cumulatively, have led to the ongoing emergence of an 'algorithmic bureaucracy' model of administration, a model in which artificial intelligence is increasingly a constituent part of public sector decision-making which directly impacts the rights and entitlements of citizens, and a model with characteristics which differ in key ways from those which were previously dominant.

Many systems in use in government which involve automation still retain an element of human involvement. It is important for those considering newer models of administration not to discount the importance of these systems, whether they are in the form of 'human in the loop' (such as algorithmic decision support tools) or 'human on the loop' (where the output of the algorithmic system will prevail, unless a human actor intervenes). The move beyond algorithmic systems providing *assistance* in decision-making to computers *making* the decisions and, to go even further, creating or modifying the frameworks which govern *how* they make those decisions, is not some magical rubicon that must be crossed in order for the characteristics of algorithmic bureaucracy to exist in parts of the administrative state. That is not to say this line has not already been crossed in some areas of the public sector. But systems which retain a human decision-making element have, in themselves, significant implications for how administrative systems operate. These type of systems are now a feature of the administrative bureaucracies of the UK, and one that is likely to feature yet more prolifically in the coming decades. Assisted decision-making - that is, human decision-making which is informed by the outputs of algorithmic or artificial intelligence tools - is used in the fields of immigration, social security, policing and other areas of the criminal justice system in the UK. Research on the relationship between the assistant (technologies) and the assisted (humans) can give important insight into the potential pitfalls of administrative systems which incorporate this hybrid form of decision-making. Behavioural scientists and psychologists have begun to study these interactions and it has been generally recognised that in some situations human decision-makers are susceptible to 'automation bias' or 'algorithmic bias' as a result of over-reliance on, or excess deference to, technologies which are intended to be only supportive aids to decision-making. This means that even if the intention is for human decision-makers to be contributing meaningful input to a decision, and the decision is not viewed as being a 'solely' automated one, the

[45] Bovens and Zouridis (n 15) 175.

[46] Roy Derek Sainsbury, 'Talking Universal Credit: in conversation with Lord Freud, Minister for Welfare Reform' (2014) Journal of Poverty and Social Justice 22 37.

algorithmic tool can nonetheless have a significant impact on the decision outcome and can curtail or narrow any discretion which may otherwise have been exercised by the human decision-maker.[47]

There have been attempts to monitor the use of such 'human in the loop' systems; for example, researchers have used statistical methodologies to evaluate the causal impacts of algorithmic recommendations used by judges in the United States when deciding which arrested individuals should be released on bail prior to their trial, in order to assess whether the introduction of the algorithmic tool improves the fairness of judges' decisions.[48] But research into these relationships is often highly context-specific. Evidence from healthcare and clinical settings - one area in which the interaction between algorithmic decision-support technologies and the professionals using them has been more extensively studied, is not readily transferable to how another tool might influence a busy immigration official's determination of a visa application from an unknown person from another country. Environmental and organisational factors external from the tool itself can influence how it is used - time pressures on the human decision-maker, targets, lack of training or understanding of their decision-making role, or the limits of the tool, could all contribute to over-reliance. Conversely, a mentality or culture of scepticism towards technology or lack of understanding of its function in a particular context could also play a role in how the outputs of algorithmic tools are *under-utilised* by human decision-makers.[49] Examining front-line caseworkers' perceptions of the utility of artificial intelligence in their specific bureaucratic areas of expertise, such as the study by Flügge *et. al*. on job placement caseworkers in Denmark,[50] could help shed light on how specific tools might be, or are in fact, used in practice. More fundamentally, as Binns highlights, use of these systems in administrative settings raises the question of how, if at all, a notion of individualised justice can be accommodated within these socio-technical systems.[51]

The increase of policymakers turning to automation in the public sector to implement and operationalise policy has brought with it recognition of the importance of cultivating in-house technical expertise within government. This can be seen in the evolving professions and skill-sets of civil servants, many

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[47] Reuben Binns, 'Human Judgment in algorithmic loops: Individual justice and automated decision-making' (2022) Regulation & Governance 16 197.

[48] Kosuke Imai, Zhichao Jiang, D James Greiner, Ryan Halen and Sooahn Shin, 'Experimental Evaluation of Algorithm-Assisted Human Decision-Making: Application to Pretrial Public Safety Assessment' (v4 revised 2021, 2020) <https://doi.org/10.48550/arXiv.2012.02845> last accessed 24 July 2022; Ben Green and Yiling Chen, 'Disparate Interactions: An Algorithm-in-the-Loop Analysis of Fairness in Risk Assessments' in *FAT* '19: Proceedings of the Conference on Fairness, Accountability, and Transparency* (ACM 2019) 90; Manuel Portela, Carlos Castillo, Songül Tolan, Marzieh Karimi-Haghighi, and Antonio Andres Pueyo, 'A Comparative User Study of Human Predictions in Algorithm-Supported Recidivism Risk Assessment' (v2 revised 2022, 2022) <https://doi.org/10.48550/arXiv.2201.11080> last accessed 24 July 2022.

[49] The phenomena of 'algorithm aversion', and how this might be mitigated, has been explored, for example, in Berkeley J Dietvorst, Joseph P Simmons, Cade Massey 'Overcoming Algorithm Aversion: People Will Use Imperfect Algorithms If They Can (Even Slightly) Modify Them' (2016) Management Science 64 1155.

[50] Asbjørn Ammitzbøll Flügge, Thomas Hildebrandt and Naja Holten Møller, 'Street-Level Algorithms and AI in Bureaucratic Decision-Making: A Caseworker Perspective' Proceedings of the ACM on Human-Computer Interaction 5:CSCW 1 Article 40 (2021) <https://doi.org/10.1145/3449114> last accessed 24 July 2022.

[51] Binns (n 46).

of whom are housed in dedicated Digital, Data and Technology (DDaT) functions and Analysis functions serving government departments.[52] DDaT civil servants have roles focusing on data, IT operations, digital product and delivery, quality assurance testing and technical areas such as roles as data architects (designing and building data models), infrastructure engineers (designing, building and managing the technological infrastructure which underpin internal and public-facing services) and software developers (designing, running and improving software). User design specialists use ethnographic methods to research and inform design aspects of how service users interact with digital services, including content, graphics and the overall 'end-to-end user journey'. In addition to the skillsets that these technology specialists bring, associated ways of working and cultural changes of the kind already seen in previous modes of administration such as e-government and digital-era government, are now more embedded. In some areas a philosophy of 'innovation' and 'creativity' is encouraged, such as in designated 'innovation labs'.[53] 'Agile' methodologies of project development and management; iterative delivery of software or IT systems, where functionality is incrementally added or developed over time; and 'test-and-learn' or 'rapid prototyping' practices are now more commonplace. The importance of design of products and services in administration has of course already been extensively recognised under previous administrative models; Lipsky recognised in the 1980s that policy implementation depended on it. Similarly, 'design thinking' methods are not new, it being a methodological movement which emerged in the mid-twentieth century with Herbert Simon as an early proponent.[54] But in algorithmic bureaucracies these methodologies now sit at the core of system development in government, aimed at reducing the gap not only between policy-making and delivery, but also between citizens and states by centring service users.[55]

Designers and builders of technological systems in the public sector are increasingly being called upon to reflect public values in their work. Machine learning practitioners are being asked to embed fairness, accountability and transparency in their work, as a result of external commentators in academia and civil society; expanding regulatory requirements; and internal stakeholder demands. But they are doing so in

[52] Civil Service Digital, Data and Technology Profession, *Digital, Data and Technology Profession Capability Framework*, (published 2017, updated 2022) <https://www.gov.uk/government/collections/digital-data-and-technology-profession-capability-framework> last accessed 24 July 2022; Civil Service Government Analysis Function, *Government Analysis Function Career Framework* (published 2020, updated 2021) <https://www.gov.uk/government/publications/analysis-function-career-framework> last accessed 24 July 2022.

[53] Piret Tõnurist, Rainer Kattel and Veiko Lember, 'Innovation labs in the public sector: what they are and what they do?' (2017) Public Management Review 19 1455.

[54] Herbert A. Simon, *The Sciences of the Artificial*, (3rd edn, MIT Press 1996).

[55] Amanda Clarke and Jonathan Craft, 'The Twin Faces of Public Sector Design' Governance (2019) 325 <https://doi.org/10.1111/gove.12342> last accessed 24 July 2022; Nesta, IDEO and Design for Europe, 'Designing for Public Services: A Practical Guide' (2016) <www.nesta.org.uk/toolkit/designing-for-public-services-a-practical-guide> last accessed 24 July 2022; Michael Mintrom and Joannah Luetjens, 'Design Thinking in Policymaking Processes: Opportunities and Challenges' Australian Journal of Public Administration (2016) 75 391.

complex and messy contexts, alongside organisational priorities and pressures which may or may not align with the theoretical best practice of implementing these values.[56]

In addition to the 'in-house' changes in the civil service, much of the early rollout of automation and algorithmic technologies in the public sector has relied on the procurement of technology from commercial providers, used technology developed in partnership with the private sector, or has outsourced parts of decision-making processes which use novel technology which the public body does not already have within its capabilities.[57] This has continued the NPM trend for an increased role for the private sector in the public sector, but comes with new versions of the concerns for public sector accountability and transparency which were previously associated with the contracting-out of services.[58] If public sector decisions are made using technology protected by intellectual property rights of third parties, public bodies sign up to contractual confidentiality obligations to private partners, or commercially sensitive information is otherwise used in the development of those technologies, these factors may be deployed by public bodies as a reason for the non-disclosure of details of how the system works to those seeking such information. Researchers in the UK have come up against this phenomenon when using processes under the Freedom of Information Act 2000 to obtain information needed for mapping the use of data analytics by local authorities.[59] It is also possible that the public sector body themselves may not have a full understanding of the inner-workings of the tools they are deploying, if the private company supplying the tool or system to a public body relies on commercial confidentiality as a basis for not explaining fully how the technology functions to the procuring body.[60]

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[56] Michael Veale, Max Van Kleek and Reuben Binns, 'Fairness and Accountability Design Needs for Algorithmic Support in High-Stakes Public Sector Decision-Making' in *CHI '18: Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (ACM, 2018) No. 440 <https://doi.org/10.1145/3173574.3174014> last accessed 24 July 2022.

[57] Amanda Clarke, 'The Evolving Role of Non-State Actors in Digital-Era Government' (2018) <https://ssrn.com/abstract=3268084> last accessed 24 July 2022.

[58] For a discussion of public law's role in regulating government contracting see: ACL Davies, 'The Public Law Perspective' in *The Public Law of Government Contracts* (OUP 2008).

[59] Lina Dencik, Arne Hintz, Joanna Redden and Harry Warne, 'Data Scores as Governance: Investigating Uses of Citizen Scoring in Public Services' (Data Justice Lab, Cardiff University 2018) <https://datajusticelab.org/data-scores-as-governance/> last accessed 24 July 2022.

[60] This was the case when the Home Office relied on analysis by automated voice recognition software operated by the Educational Testing Service (ETS) to identify students who had cheated on an English language test taken as part of their applications for visas or leave to remain in the UK. In an appeal in the Upper Tribunal by two individuals who had had their leave to remain cancelled by the Home Office on the basis that they had cheated in their tests, it emerged that ETS had made clear to the Home Office that the software would not be disclosed to them on account of it being 'confidential' (*SM and Qadir (ETS – Evidence – Burden of Proof)* [2016] UKUT 229 (IAC), see also Jack Maxwell and Joe Tomlinson, *Experiments in Automating Immigration Systems* (Bristol University Press 2022), 6. The Upper Tribunal has more recently given guidance that the evidence tendered on behalf of the Home Office in the ETS cases is 'amply sufficient to discharge the burden of proof' and that the 'voice recognition process is clearly and overwhelmingly reliable in pointing to an individual test entry as the product of a repeated voice' in *DK and RK (ETS: SSHD evidence, proof) India* [2022] UKUT 112 (IAC).

# III: Algorithmic bureaucracy in context: the increasingly digital welfare state

Having considered the overarching shift in administration in the UK towards increased use of automated decision-making, it is also helpful to observe the features of algorithmic bureaucracies in a specific policy context by way of illustration. The area selected for more in-depth exploration for this purpose is welfare benefits and social security, which sets the scene for consideration of the *Johnson* judicial review case discussed in section IV. In particular, the focus is on welfare support as administered by the Department of Work and Pensions (DWP) the central government department predominantly responsible for this area, alongside Her Majesty's Revenue and Customs' (HMRC) administration of tax credits and child benefit.

The Department for Work and Pensions is the UK's largest public service department and employs the most civil servants of the central government departments and their associated agencies and public bodies.[61] With responsibility for policy on welfare benefits, pensions and child maintenance, the DWP administers the majority of working age, disability and ill health benefits,[62] in addition to delivering the State Pension to the nation's pensioners. As of February 2021, some 23 million people in Great Britain - around 35% of the population - claimed one or more DWP benefit.[63] Given the phenomenal scale of delivery which is required to fulfil this remit, it is unsurprising that the DWP has reached for technology and automated decision-making to help with the execution of the mammoth task it faces in interacting with this enormous cross-section of the public and calculating and paying their benefits in a way that makes good use of public funds.

In 2022, following a period of economic and employment disruption since the start of the coronavirus pandemic and the public health measures that accompanied it, the department as a whole employed over 90,000 payroll staff (over 80,000 full time equivalent).[64] Nearly 80,000 of these staff are Administrative Officers/Assistants and Executive Officers who have operational delivery roles which may involve being on the 'front-line' of service delivery, interacting with the public, or have an administrative decision-making role such as carrying out internal reviews of decisions on benefit entitlement. Within this group sit Senior Executive

[61] Institute for Government analysis of ONS Public Service Employment Data (table 9), Q3 2021 (Institute for Government, *Civil Service Staff Numbers (FTE) by Department* (2021) <https://www.instituteforgovernment.org.uk/charts/civil-service-staff-numbers-fte-department> last accessed 28 December 2021).

[62] Welfare support not administered by DWP includes Tax Credits and Child Benefit which are administered by HMRC. There are a decreasing number of households in receipt of Tax Credits as they have been replaced by Universal Credit and are being phased out.

[63] Department for Work and Pensions, *Benefit Combinations to February 2021* (3 September 2021) <https://www.gov.uk/government/statistics/dwp-benefits-statistics-august-2021/benefit-combinations-to-february-2021> last accessed 24 July 2022.

[64] Department for Work and Pensions, *DWP: workforce management information February 2022* (25 March 2022) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061866/dwp-workforce-management-information-february-2022.csv/preview> last accessed 24 July 2022.

Officers and Higher Executive Officers who are generally policy officers and officials with specific policy responsibilities. In the digital welfare state environment, these roles include digital roles to support service design and delivery of the universal credit digital service and support data-based decision-making alongside teams that are designing and delivering new features for the universal credit service (for example, Associate Data Scientists). At a more senior level within the department's staff body, are experienced officials often with significant responsibility for policy. These roles increasingly reflect the fact that policy design goes hand-in-hand with digital design: for example, Senior Solution Architects, who design technical solutions (products and services) and deliver the technical and architectural design elements of DWP services. Finally, at the Senior Civil Servant level sit those who have overall responsibility for an area of policy, and work closely with ministers. Again, the importance of digital systems can be seen in the responsibilities of this group, such as the Head of Digital Corporate Services, who is accountable for the delivery of corporate digital services within DWP such as enterprise resources planning solutions.

Within this vast civil service body, the scale of the DWP's dedicated in-house information technology resource is impressive. DWP Digital, the department's digital unit mentioned above, is now based out of seven 'digital hubs' across England and employs IT specialists with expertise in areas such as software engineering, DevOps, data science, product design and management and user experience (UX) research, to name but a few. DWP Digital has represented the department's core single digital function since former employees of the Benefits and Pensions Digital Technology Services (BPDTS Ltd) were brought fully 'in-house' to the DWP in July 2021, following a review of BPDTS Ltd's role and longer-term recognition that more in-house capacity was needed.[65] BPDTS Ltd previously provided specialist commissioned digital technology services to the department as an arms-length body. It was set up in 2016 as a 'hybrid model' to bring outsourced technology services within the public sector, whilst both reducing overall costs and navigating the constraints on pay and reward structures of civil servants in a way that meant that employees with the requisite digital skills could be recruited from the private sector. A similar model has been used by HMRC (via Revenue and Customs Digital Technology Services Ltd),[66] but as the business need for creative recruitment approaches has lessened, both departments are abandoning this model in order to insource their digital functions. Moreover, in addition to this dedicated digital function at DWP, digital and automated technologies are now so ingrained and prolific in the department's modern service delivery that there are civil servants working across Operational Delivery,

[65] Department for Work and Pensions and BPDTS Ltd, *BPDTS Ltd: tailored review* (29 September 2020) <www.gov.uk/government/publications/bpdts-ltd-tailored-review> last accessed 24 July 2022; David Freud, 'Universal Credit: What went wrong, and what we learned' (Computer Weekly, 25 June 2021) <www.computerweekly.com/opinion/Universal-Credit-what-went-wrong-and-what-we-learned> last accessed 24 July 2022.

[66] Sam Trendall, ''Taking more control of IT strategy' – HMRC to close in-house tech firm' (Civil Service World, 19 January 2022) <www.civilserviceworld.com/professions/article/taking-more-control-of-it-strategy-hmrc-reveals-plan-to-close-in-house-tech-firm-rcdts> last accessed 17 April 2022.

Counter Fraud, Strategy, Policy and Analysis and Finance divisions[67] who, even if they are not specifically DDaT professionals themselves, operate within an environment which is both enabled and constrained by the digital technologies which underpin it.

**Advanced technologies**

The degrees of sophistication of the technologies deployed by the DWP could be said to range from the mundane to the aspirational, though all with their respective roles to play within the increasingly digital welfare state. Cultivating technologies at the more aspirational end of the scale, the Department's Innovation Lab, set up in 2018, describes itself as a 'rapid prototyping team' which looks at 'cross cutting problems or opportunities which [the Department] can address with technology…at pace'.[68] The 'innovation' aspect of the lab refers not just to the digital creations which might emerge from it but also the team's working and organisational practices which differ from the dominant models historically seen in public sector bureaucracies. The Head of the Innovation Lab at DWP describes 'design thinking methodologies', carried out in partnership with a private sector partner, as being central to the lab's approach to problem solving and, speaking more generally about the Department's cultural and strategic direction, cites the DWP's shift 'from a product oriented organisation to a more customer centric joined-up services oriented organisation' as a key change driving the digital innovation work.[69] The application of coding philosophies such as continuous integration (a software engineering practice which allows frequent and isolated changes to be tested as part of a larger set of code without causing disruption to the ongoing operation of the existing system) and continuous delivery (using automation to push code changes to existing infrastructure environments) enable developers to roll out changes quickly and on a regular basis, in a way that might not previously have been feasible under traditional policy implementation methods.

Also working at the more cutting-edge end of the Department's technological sophistication scale is Intelligent Automation Garage, established in 2017. Utilising technology procured from the private sector via multi-million pound contracts,[70] the DWP has deployed over 20 'robotic process automation' solutions (or

[67] For example, see: Department for Work and Pensions, *Organogram of Staff Roles & Salaries* (Senior, snapshot for 31 March 2022) <www.data.gov.uk/dataset/dbdf0bef-f47d-4ae9-9d78-fff8b7719f84/organogram-of-staff-roles-salaries> last accessed 24 July 2022.

[68] Simon King (Head of User Centred Design) speaking on Department for Work and Pensions (DWP Digital), *Podcast: Digital Innovation at the UK's Largest Government Department - Episode #02 Creating an innovation culture* (12 May 2021) <https://dwpdigital.blog.gov.uk/2021/05/12/podcast-digital-innovation-at-the-uks-largest-government-department/> last accessed 7 November 2021; Department for Work and Pensions (DWP Digital - Digital Innovation Lab), 'Building an Innovation Culture: 8 Things to Consider' (2020) <https://careers.dwp.gov.uk/wp-content/uploads/2020/12/Building-an-innovation-culture-8-key-things-to-consider.pdf> last accessed 7 November 2021.

[69] Simon King (Head of User Centred Design) speaking on Department for Work and Pensions (DWP Digital), *Podcast: Digital Innovation at the UK's Largest Government Department - Episode #02 Creating an innovation culture* (12 May 2021) <https://dwpdigital.blog.gov.uk/2021/05/12/podcast-digital-innovation-at-the-uks-largest-government-department/> last accessed 7 November 2021.

[70] For example the £3m procurement of Robotic Processing Automation software licenses from Comparex (Department for Work and Pensions, *Intelligent Automation Garage Nice Software (or equivalent)* (Contracts Finder, 4 January

over 50 'robots') in its efforts to solve problems such as a backlog of pension claims, the processing of which previously involved a high volume of repetitive manual tasks.[71] In dealing with the backlog of pensions claims, DWP deployed 12 UiPath 'robots', capable of handling 2,500 claims per week, to clear the backlog of applications in a fortnight and avoiding the need to redeploy staff or hire additional staff to resource an exercise which would have required 'several thousand hours' of human effort. In addition to the use of robotic process automation, the Intelligent Automation Garage uses other technologies such as computer vision and optical character recognition, natural language processing, and deep learning to automate routine tasks, with a view to increasing productivity and aid decision-making, as well as freeing up staff time spent on administrative tasks.[72]

**Universal Credit**

Any comprehensive discussion of algorithmic bureaucracy within welfare benefits in the UK must consider the socio-technical behemoth of a system that delivers universal credit, which dwarfs the examples of automation discussed above in terms of scale. A judicial review challenge to a specific aspect of universal credit (UC) is discussed in-depth in section IV, but it is helpful, at this stage, to set out an overview of the system. UC is the 'hyper' means-tested benefit for working age people in the UK, available whether or not they are currently in or out of work. It has gradually been replacing six separate so-called 'legacy benefits' since its initial introduction in April 2013. 'Full service' roll-out of universal credit across the UK was completed in December 2018 and the number of people on the benefit at any one time has since peaked at six million.[73] The DWP currently aims to complete the migration of benefit claimants from 'legacy benefits' to universal credit by the end of 2024.[74] Universal credit is 'digital by default' benefit, meaning that the vast majority of claimants, unless they have a particular reason why they need to claim via telephone, will make their initial claim for UC online and then continue to manage their benefit award via a digital account.

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2018) <www.contractsfinder.service.gov.uk/notice/aa27c638-a3ab-475b-a8a1-aa6ddfba8b78?origin=SearchResults&p=2> last accessed 24 July 2022.

[71] Convedo Intelligent Process Automation Blog, 'Blog 1: How Intelligent Automation is improving public services,' <https://info.convedo.com/blog-1-how-intelligent-automation-is-improving-public-services> last accessed 24 July 2022; UiPath, 'The UK's Largest Government Department Transforms Business Processes with RPA' <www.uipath.com/resources/automation-case-studies/dwp-government> last accessed 24 July 2022.

[72] Department for Work and Pensions - DWP Digital, *Intelligent Automation Garage Service Manager Level II Candidate Information Pack,* accessed 11 August 2021 (copy held by author).

[73] The peak number of universal credit claimants (to date) was recorded on 11 March 2021 - this statistic captures the number of people who have made a claim to universal credit who have verified their identity and have accepted their 'claimant commitment' on the second Thursday of the month. Not all of these people will receive a payment of universal credit that month (Department for Work and Pensions, *Universal Credit statistics, 29 April 2013 to 14 April 2022* (updated 17 May 2022) <www.gov.uk/government/statistics/universal-credit-statistics-29-april-2013-to-14-april-2022/universal-credit-statistics-29-april-2013-to-14-april-2022> last accessed 24 July 2022.

[74] Department for Work and Pensions, 'Completing the Move to Universal Credit: Our 2022-24 strategy for implementing the final phase of Universal Credit' (2022) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1070847/completing-the-move-to-universal-credit.pdf> last accessed 24 July 2022.

It is in some sense misleading to refer to a singular universal credit 'system'. That phrase is commonly used as shorthand to refer to a multitude of interacting IT systems working alongside human - whether DWP agents or individual claimants - actions and inputs. The extent to which different parts of the overall universal credit system (adopting the shorthand term) are automated is not always evident, both to individuals interacting with the system and to technical researchers, social security experts, lawyers and judges examining it. Messages appearing on a claimant's online 'journal' - the two-way messaging system through which universal credit claimants and DWP communicate - are sometimes attributed to named DWP agents located in service centres or job centres (though not necessarily the job centre to which the individual claimant is geographically assigned for their face-to-face interactions with the Department) but at other times are recorded as being messages sent by 'an agent'. As Raso observes, it is unclear which of these messages are written by front-line workers and which are computer generated.[75] The results of a data subject access request made by an individual claimant to the DWP for their universal credit records will invariably shed little further light on this.

Despite an overarching principle of automation underpinning the design of the benefit, aspects of the universal credit socio-technical system in its current form undoubtedly retain a role for the 'street-level bureaucrat'. In Jobcentres in communities up and down the country, 'Work Coaches' - one of the key DWP Executive Officer level roles - manage caseloads of universal credit and jobseekers allowance awards. Work Coaches interact directly with individual claimants with various degrees of regularity and intensity, depending on which 'conditionality group' a claimant falls into. Which conditionality group a claimant is placed into depends on their circumstances and capabilities; the groups range from 'no work-related activity requirements' for claimants who are not expected to do anything to prepare or look for work at one end of the scale, to 'all work-related requirements', for claimants who are required to look and apply for work and attend interviews for available vacancies, at the other end of the scale. In the middle there are two further groups: 'work-focused interview and work preparation requirements only', which requires things like CV writing and attending training or work experience; and 'work-focused interview requirements only' which requires claimants to attend regular meetings with their Work Coach only. The details of the activities individual claimants are expected to undertake to fulfil these requirements are recorded in a claimant's personalised 'claimant commitment' agreed with their Work Coach and recorded on their online account, which sets out the type and volume of work searches, job applications, skills development etc. each individual will partake in. Work Coaches retain a level of discretion in setting the threshold of conditionality claimants must meet, and the activities they carry out to meet that threshold, in order to continue to be entitled to their universal credit payments each month.

[75] Jennifer Raso, 'Implementing Digitalisation in an Administrative Justice Context' in Marc Hertogh, Richard Kirkham, Robert Thomas and Joe Tomlinson (eds), *Oxford Handbook of Administrative Justice* (OUP 2022) *citing* Richard Pope, Universal Credit: Digital Welfare (Richard Pope Consulting 2020), 40-41 <https://pt2.works/files/universal-credit.pdf> last accessed 24 July 2022.

Even front-line roles of this nature which emphasise 'relationship building' and communication with 'customers' as part of the job description are increasingly not immune from automation. The DWP is currently trialling a 'digital career coach' algorithmic system in Jobcentres called 'Bob'. 'Bob' uses artificial intelligence and, in the UK trial version, additional local labour market data, to recommend next steps for jobseekers, based on their personal profile.[76] Even when AI tools are not deployed, the range of decisions available to Work Coaches, and in the circumstances and timing of which they take them, are also constrained by the design of computer systems: in certain situations they are presented with 'to-do actions' via the digital systems they use, in response to which they have a defined list of possible responses to choose from. There are also many instances where human interaction between a UC claimant and DWP official will not be face-to-face via their designated Work Coach who is familiar with their circumstances and background on their benefit award, but will instead be via their online account with an agent based in a centralised service centres, where the probability of speaking to the same person on issues that arise over the course of an award is low. The cumulative effect of these systems contributes to a distancing between citizen and 'street-level bureaucrat' and a narrowing of their discretionary influence. It is not possible to confidently impute a policy intention behind the observable effects of automation, but social policy researchers have speculated that the effect on the culture in street-level bureaucracy within the DWP is a deliberate welfare policy choice. As Griffiths puts it:

> Although never officially articulated, the ceding of human agency to automated assessment and payment systems may also have been motivated by the desire of policymakers to change the culture and behaviour of DWP staff who may have been seen as contributing to claimants' 'welfare dependency' and to programme deadweight.[77]

Whether it results from a conscious policy intention, or is a by-product of policy implementation and delivery choices motivated by efficiency and cost effectiveness, or some combination of the two, there is nonetheless an observable impact of automation on front-line administration.

Technology also appears to have a role to play in the exercise of discretion of policymakers further up the DWP organisational hierarchy away from the street-level interaction with individual claimants. On the one hand, universal credit was designed from the outset to be rolled out with a 'Test and Learn' approach which would be flexible and responsive to evolving policy priorities. On the other hand, it has become clear that implementation and architectural system design choices made along the way have significantly shaped and constrained future policy decision-making. Putting aside the question of whether changes to the system are deployed by ministers as a way of dancing to the current political 'mood music' in an often controversial policy arena or as a result of a sound empirical evidence base for the policy choice in question, there are examples of the in-built flexibility of the UC system being utilised in practice.

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[76] Katie Searles, *UK's Jobcentre Plus to trial AI-powered employment matchmaker* (Robotics and Innovation, 23 February 2022) <www.roboticsandinnovation.co.uk/news/ai/uks-jobcentre-plus-to-trial-ai-powered-employment-matchmaker.html> last accessed 17 June 2022.

[77] Rita Griffiths, 'Universal Credit and Automated Decision Making: A Case of the Digital Tail Wagging the Policy Dog?' [2021] Social Policy & Society 1, 6.

One example of the flexible capabilities being used are the adjustments that have been made to the 'taper rate' and 'work allowance'. Both the 'taper rate' and 'work allowance' are shorthand for mechanisms that operate within the formula that retrospectively calculates claimants' monthly universal credit amount, based on their circumstances during that month. The 'taper rate' effectively governs how many pence in each pound in-work universal credit claimants get to keep of the wages they received in the monthly 'assessment period'. Since April 2017, it had been set at 63% (meaning that for every £1 additional earned income a claimant's UC would be reduced by 63 pence) but following the 2021 Autumn Budget and Spending Review it was reduced to 55%.[78] 'Work allowances' are thresholds which (currently) apply to a subset of that in-work claimant group - at the present time namely those with responsibility for one or more children or recognised as having limited capability for work - which determines the amount of their wages they can keep in full before the 'taper rate' kicks in. There are higher and lower thresholds depending on whether housing costs are paid as part of an award. Alongside the changes to the 'taper rate', the work allowance thresholds were both raised by £42 per monthly assessment period to £335 and £557 respectively following the 2021 Budget (subject to further annual uprating each April).[79] What is notable in terms of flexibility of the system is that these policy changes required adjustments to the universal credit automated calculator and were able to be rolled out within just a few weeks of the Budget announcement.[80]

An even quicker adjustment to the automated calculator was made at the onset of the coronavirus pandemic when, following an announcement by the Chancellor on 20 March 2020, the standard allowance in universal credit was increased by £20 a week. Just over two weeks later, this increased amount was being paid to claimants as part of their regular monthly payments.[81] Automation and the speed with which this could be implemented by making changes to the universal credit auto-calculate and auto-pay functions influenced decision-makers in (at least) two ways: the different treatment of universal credit claimants compared to the predominantly disabled claimants on 'legacy benefits' (here referring to income-based employment and support allowance, income support and jobseeker's allowance), who did not receive the £20 'uplift'; and the decision to provide the £20 'uplift' to *all* universal credit claimants as at March 2020 rather than just new claimants. According to DWP evidence provided to the High Court, the decision to exclude 'legacy benefits' from the uplift was in part due to the 'delivery risks' due to 'the ageing nature of the DWP's legacy IT systems', in addition the five months' lead-time that would have been needed to operationalise the increase in legacy

[78] HM Treasury, *Autumn Budget and Spending Review 2021* (HC 822, published 27 October 2021), 4.

[79] ibid.

[80] Universal Credit Regulations 2013, SI 2013/376, reg 22 as amended by Universal Credit (Work Allowance and Taper) (Amendment) Regulations 2021, SI 2021/1283 which came into force on 24 November 2021.

[81] Rishi Sunak, Chancellor, 'Updated Statement on Coronavirus' (Downing Street, 20 March 2020) <www.gov.uk/government/speeches/the-chancellor-rishi-sunak-provides-an-updated-statement-on-coronavirus> last accessed 17 June 2022. Changes to the standard allowance were effected by the Social Security (Coronavirus) (Further Measures) Regulations 2020, SI 2020/371 which came into force on 30 March 2020 and took effect for universal credit assessment periods ending on or after 6 April 2020.

benefit rates. Similarly, any attempt to separate out *new* UC claimants from *existing* UC claimants would have presented 'technical difficulties'.[82] [83] Both of these factors were taken into account by the High Court when concluding that the Secretary of State's decision not to provide the uplift to 'legacy benefit' claimants did not amount to unlawful discrimination under Article 14 of the European Convention on Human Rights, when read with Article 8 and Article 1 to the First Protocol.

What is notable about the two examples of DWP delivering rapid change in the universal credit automated system discussed above, is that both changes concerned adjustments to figures (in the case of the 'taper rate', a multiplier) within the existing formula which calculates universal credit amounts for claimants, rather than any structural changes. In other areas, particularly areas that concern the 'architecture' of the universal credit system, such as the monthly assessment period, less flexibility is evident. Bennett and Millar have argued that core features of the universal credit system limit future policy-makers options and the inherent automation in the operation of the system increases policy makers' resistance to change.[84] Similarly, Griffiths has asked the pertinent question of whether the automation in the administration of universal credit has given rise to 'a case of the digital tail wagging the policy dog', suggesting that 'greater compliance to the technical constraints of automation…continues to hold sway within the Government and among DWP policymakers'.[85] It is for these reasons that universal credit makes an interesting case study for examining the extent to which and the ways in which judicial review impacts administration, and one that will be revisited in section IV.

**Fraud and error detection in welfare benefits**

The prevention and detection of fraud and error in relation to social security benefits is an area where - although there may be differing views on where and on whom efforts should be focused - there is a strong economic public interest argument for governments to take extensive and efficient action, in an effort to ensure public funds are protected. Due to the nature of the area, at least in relation to deliberate fraud (as opposed to unintentional or accidental claimant error), public bodies also have a justifiable interest in keeping details of the detection methods out of the public domain, so that those seeking to avoid detection do not have easy access to the information which would assist them to do so. The use of various algorithmic technologies in the detection of fraud is not new in society more generally. The financial services and banking sector in the UK

[82] Evidence of Kerstin Parker, Deputy Director for Universal Credit, as discussed in the judgment of Mr Justice Swift in *R (T and ors) v Secretary of State for Work And Pensions* [2022] EWHC 351 (Admin) (appeal pending).

[83] It is worth noting that despite the £20 uplift being applied across the board between new and existing UC claimants, some existing claimants did not benefit from the increase, whether in full or in part, due either them either already being benefit capped or the increased in benefit amount leading to them being capped. Although new claimants could also be benefit capped, many of them were able to benefit from a "grace period" of nine months of being exempt from the cap, due to their levels of earnings in the 12 months prior to claiming UC (Neville Harris, Ciara Fitzpatrick, Jed Meers and Mark Simpson, 'Coronavirus and social security entitlement in the UK' (2020) Journal of Social Security Law 27(2) 72).

[84] Fran Bennett and Jane Millar, 'Inflexibility in an integrated system? Policy challenges posed by the design of Universal Credit' (2022) Barnett Papers in Social Research, Working Paper 22-01.

[85] Rita Griffiths, 'Universal Credit and Automated Decision Making: A Case of the Digital Tail Wagging the Policy Dog?' [2021] Social Policy & Society 1, 10.

and other countries makes extensive use of sophisticated technologies as part of their efforts to protect customers and their businesses from types of fraud such as credit card and payment fraud, ranging from rules-based systems, which are manually expanded over time to capture additional fraud patterns and techniques as they emerge via new 'rules' being added to the algorithm, to complex machine learning tools, which can be retrained on new datasets to recognise evolutions in patterns of suspicious transactions and deal with 'concept drift' as fraudsters use new tools and methods to evade detection over time.

Since 2010, the Risk and Intelligence Service of HMRC has operated a data matching and risking tool which uses predictive analytics and risk profiling to identify targets for fraud investigation and compliance action, in relation to both suspected tax evasion, and fraud and error within the tax credits system.[86] The computer system, known as Connect, was designed by BAE Systems and uses 'social network analysis' to map taxpayers' networks of relationships, with the aim of identifying anomalous patterns which might indicate fraud. In doing so, it matches data from at least 30 internal and third party data sources, including Companies House, the Drivers and Vehicle Licensing Agency, Land Registry, bank accounts and even online marketplaces such as eBay. According to HMRC, Connect has two 'environments': the analytical branch which involves the manipulation, analysis and profiling of data and enabled HMRC to match live tax credits claims against other data to identify issues with the claims such as undeclared wealth or partners; and the visualisation tool which presents the linked data pictorially (in what are essentially complex spider diagrams) so that Risk and Intelligence Service staff can use the results to conduct further targeted risk assessment. Feedback from caseworkers further refines intelligence in Connect.

More recently, the DWP has been developing its use of automation and data analytics capabilities to progress its fraud prevention and detection strategy in relation to welfare benefits. In 2020, the department informed the Public Accounts Committee that it aimed to assess every UC claim using 'transaction risking', a practice used extensively in financial services and also deployed by HMRC.[87] Since at least 2014, HMRC has used an automated risk assessment system called TRUCE (Transaction Risking Upstream in the Connect Environment) which risk-assesses repayment request transactions to provide 'real time alerts' and to prevent erroneous or fraudulent tax refunds being paid.[88] Requests identified as low risk are paid automatically, whereas high or medium risk requests are referred for further assessment. For DWP, 'transaction risking' has been identified as being 'one of the most important capabilities to achieve the operational savings and fraud

[86] *Letter from the DWP Permanent Secretary & HMRC Chief Executive to Meg Hillier MP, Chair of the Public Accounts Committee* (10 June 2016) <https://www.parliament.uk/globalassets/documents/commons-committees/public-accounts/Correspondence/2015-20-Parliament/PAC-Response-final-signed-copy-of-follow-up-letter-to-3rd-party-data.pdf> last accessed 24 July 2022.

[87] Public Accounts Committee, *Department for Work and Pensions Accounts 2019–20* (HC 2019–21 681).

[88] National Audit Office, *HM Revenue & Customs, The effective management of tax reliefs, Report by the Comptroller and Auditor General* (HC 2014-15 785), Appendix 3; Capgemini Consulting, *The evolution of risk management in a digitally transforming landscape* (2017), 2 <www.capgemini.com/consulting-gb/wp-content/uploads/sites/34/2017/08/risk_management_pov_20-7_v5_0.pdf> last accessed 4 March 2022.

and error reductions required to scale UC'.[89] It was recognised in 2019 within DWP that transaction risking 'enabling work' and deployment of simple transaction risking features needed to be prioritised urgently so that 'more complex and high-value' features could be deployed in the future.[90]

Within the DWP, fraud and error detection has most recently been carried out by the Integrated Risk and Intelligence Service (IRIS), which brought together the department's Risk and Intelligence Service, Cyber Resilience Team and Serious and Organised Crime Investigators.[91] The establishment of this integrated unit represents a long-standing aim of the department in support of increasing its data-matching capabilities, building upon its existing Housing Benefit Data Matching Service (introduced in 1996) and the Generalised Matching Service.[92] In May 2020, an additional team called the Risk Review Team was created in response to threats identified by IRIS, including through the use of algorithmic tools, and was tasking with reviewing and taking action on cases identified as a high fraud risk.[93] By February 2022, 174,000 UC awards had been suspended under the department's Risk Review Process, with only just over 5,000 (around 3%) of these being 'de-suspended'.[94] Transparency around the means by which this group of UC awards were identified by IRIS is extremely limited, despite questions being asked in Parliament.[95] The Department has confirmed that it has trialled a risk model to detect fraud in Universal Credit advances claims using machine learning and based on information from historical fraud cases to predict which cases are likely to be fraudulent in the future.[96]

While many of the suspended claims may not have been made in respect of genuine claimants, for individuals who are subjected to the Risk Review Process, suspension of their universal credit obliterates their income: overnight their housing costs, subsistence income and, if any, childcare costs, for them and their children are stopped while their award is investigated. This is in contrast to the position when, for example,

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[89] Department of Work and Pensions, *Programme Board memorandum, 'Enabling Transaction Risking'* (UCPB101219-Paper 5, 10 December 2019) <https://data.parliament.uk/DepositedPapers/Files/DEP2022-0377/15-UCPB_10-12-19_-_Paper_5_-_Transaction_Risking_R.pdf> last accessed 17 June 2022.

[90] ibid.

[91] Department for Work and Pensions, *Annual Report & Accounts 2019-20 for the year ended 31 March 2020* (HC 401).

[92] Owen Stevens, 'Risky business – DWP fraud reviews' in Welfare Rights Bulletin 287 (Child Poverty Action Group 2022). Greater Manchester Coalition of Disabled People supported by Foxglove Legal sent pre-action correspondence in relation to the DWP's use of automated technologies in the investigation of benefit fraud and error (<www.crowdjustice.com/case/dwp-algorithm/> last accessed 8 May 2022).

[93] Answer by David Rutley MP (Parliamentary Under-Secretary (Department for Work and Pensions) of 30 November 2021 to written question *Social Security Benefits: Disqualification* UIN 78474, tabled by Kate Osamor MP on 19 November 2021 <https://questions-statements.parliament.uk/written-questions/detail/2021-11-19/78474/> last accessed 30 July 2022.

[94] Answer by David Rutley MP (Parliamentary Under-Secretary (Department for Work and Pensions) of 1 March 2022 to written question *Universal Credit: Disqualification* UIN 125359, tabled by Kate Osamor MP on 18 February 2022 <https://questions-statements.parliament.uk/written-questions/detail/2022-02-18/125359> last accessed 30 July 2022.

[95] HC Deb 26 January 2022, Vol 707, cols 392WH - 399WH.

[96] Department for Work and Pensions, *Annual Report & Accounts 2021-22 for the year ended 31 March 2022* (HC 193), 229.

child tax credits awards are flagged. Under tax credits, a risk flag could lead to investigation and potentially a suspension of a claimant's tax credits for a number of weeks which was significant disruption in its own right (see discussion on the Concentrix exercise below), but if the claimant was in receipt of housing benefit this would not automatically stop at the same time (nor would any other legacy benefit they were in receipt of), leaving them with some income to survive on, alongside any earnings from work, whilst the investigation was carried out. Now, a fraud flag and associated suspension on a UC award belonging to an individual potentially puts them into an immediate personal financial crisis, forcing them into debt, putting them and their children at risk of homelessness, destitution and the emotional and psychological burden which comes with such a crisis. It is not clear that any safeguarding measures exist when it comes to the detection by the DWP of 'stock' fraud and error (ie. fraud and error in respect of benefit which is already in payment and in the system) to reflect the gravity of the situation which an unwarranted lengthy suspension of a sole source of income might bring about for an individual or household.

The digital nature of the benefit means investigation is primarily conducted by the Risk Review Team remotely and via messages on claimant's online UC journals. Once a suspension has been put in place, basic features of the technology such as 'upload tasks' created for claimants as a means to provide evidence in relation to their case can cause problems, for example, when an insufficient number of 'upload tasks' are created by UC agents for the number of documents which the claimant is required to provide. Requests for updates on their case made by claimants via their online journal or in person at their local Jobcentre, including reports of risk of eviction, difficulty providing food for children, and other indicators of the urgency of the claimant's situation, may not always be picked up by someone who has power to take any action on their particular case. Jobcentre staff who are the only front-line DWP staff to have face-to-face direct contact with claimants in these situations, and only then if the claimant proactively attends their local Jobcentre in an attempts to resolve the situation, are unable to do anything other than take copies of evidence and create 'hand-offs' in the back-end UC system to be considered by the Risk Review team when their capacity allows.

It is not only cases where there is particular fraud suspicion arising (whether as a result of specific intelligence, data matching or risk profiling) in which there is a need for DWP to conduct verification checks to prevent fraud and error. At the beginning of the coronavirus pandemic in March 2020, DWP was unable to carry out face-to-face interviews as part of their usual process for verifying new claims, due to the public health restrictions in place. The department turned to automation to help it verify the huge influx of new claims being made around this time. It was able to rapidly deploy a new verification application programming interface (API) building upon its existing catalogue of reusable code and templates which enable different IT systems to communicate with each other automatically.[97] This verification API enabled the DWP to validate claimants

[97] Melissa van Der Hecht, 'Guest post: how APIs kept our country running when everything stopped' (DWP Digital Blog, Department for Work and Pensions, 8 December 2021) <https://dwpdigital.blog.gov.uk/2021/12/08/guest-post-how-apis-kept-our-country-running-when-everything-stopped/> last accessed 30 July 2022; Sam Trendall, 'Inside DWP's digital coronavirus response – APIs, reuse and micro-services' (PublicTechnology, 28 July 2020)

through 'back-end biographic APIs' rather than via manual checks combined with face-to-face interviews. As a result, the DWP paid 97% of claims on time, despite the huge upheaval across society due to the pandemic. Other identity verification methods also continued to be used such as Verify, the cross-government GOV.UK identity verification service and, more latterly, DWP's own 'Confirm Your Identity' service which reuses HMRC's enhanced Government Gateway service:[98] many claimants also had telephone calls in place of face-to-face appointments and spoke directly to DWP agents about their claims.

From a legal perspective, however, this initial reliance on automation when verifying claims became more complicated when over a year later the department sought to retrospectively carry out further verification checks on the claims that had been accepted under the department's verification 'easements', ie. under the temporary processes which did not require face-to-face appointments.[99] At the time of accepting these claims, the DWP had digitally tagged the awards with the intention of revisiting them later and claimants were informed that they might be required to provide further evidence at a later date.[100] When the awards were subsequently revisited over a year later, claimants were asked to provide copies of ID evidence (as well as evidence of housing and children in some cases) via their online UC accounts in order to prove that they were entitled to the UC they had received since around March 2020. DWP practice was to send these requests and reminders via the online journal with a 14-day deadline to provide the information, in addition to making three phone-calls to the telephone number they held on file for the claimant, often from a withheld number. No letters were sent via post to inform claimants they were being subjected to reverification checks and needed to provide evidence. Claimants were not routinely informed as part of the requests that they could ask for an extension of the deadline if they needed it, contrary to legal requirements.[101] For those claimants who were still in receipt of UC at the time of the evidence requests, were regular users of their online journals and were confident digital users, these requests might have been fairly straightforward to respond to, at least in so far as

<https://publictechnology.net/articles/features/inside-dwp%E2%80%99s-digital-coronavirus-response-%E2%80%93-apis-reuse-and-micro-services> last accessed 30 July 2022. A full catalogue of APIs used by DWP and other public sector organisations is available at www.api.gov.uk.

[98] Alison Phelen, 'Confirm Your Identity: a new way to verify online' (DWP Digital Blog, Department for Work and Pensions, 15 October 2020) <https://dwpdigital.blog.gov.uk/2020/10/15/confirm-your-identity-a-new-way-to-verify-online/> last accessed 30 July 2022. A significant percentage of universal credit claimants are unsuccessful in using Verify (Jennifer Raso, 'Implementing Digitalisation in an Administrative Justice Context' in Marc Hertogh, Richard Kirkham, Robert Thomas and Joe Tomlinson (eds), *Oxford Handbook of Administrative Justice* (OUP 2022)). This is inbuilt into the design of the system as it is designed using 'stack ranking' so that the 'riskiest' (according to the model) can never successfully verify their identity using the system (Med Confidential, 'Decoding the Algorithm and Data Choices in DWP's Monster Factory' (2020), Annex 2A: Identity Verification in UC for the most complex claims <https://medconfidential.org/2020/Universal-Credit/> last accessed 30 July 2022).

[99] Public Accounts Committee, *Department for Work and Pensions' Accounts 2020-21: fraud and error in the benefits system* (HC 2019-21, 633).

[100] Claire Hall, 'Reverification of universal credit awards' Welfare Rights Bulletin 286 (Child Poverty Action Group 2022); Patrick Butler, 'Universal credit claimants were sent unlawful demands to repay, says charity', The Guardian (13 November 2021) <https://www.theguardian.com/society/2021/nov/13/universal-credit-claimants-were-sent-unlawful-demands-to-repay-says-charity> last accessed 7 February 2022.

[101] *VW v LB Hackney (HB)* [2014] UKUT 277 (AAC), [5] and *SS v NE Lincolnshire Council (HB)* [2011] UKUT 300 (AAC), [21].

they related to documents which they already held and absent other personal challenges such as mental health problems or the request arriving at a difficult time such as following a family bereavement or during a period of illness. However, these requests were also made of claimants who had resumed work and whose UC was no longer in payment due to the level of their earnings, therefore having no reason to continue monitoring their online UC journals. Some former claimants would have received a text message or email to notify them that a message had been posted in their journal, but these communications gave no indication of the importance of that message or that a failure to respond to it carried the significant consequences described below.

For claimants who did not respond to the requests for evidence of their identity, DWP policy was to suspend payments of UC and provide a further window of a month for evidence to be provided. For claimants who were still in receipt of UC, the suspension would in theory alert them to the fact that something was seriously wrong on their award at the point they didn't receive their monthly benefit payment when it was due. In practice, this suspension process was not used in every case.[102] For those who were no longer in receipt of UC, there were no ongoing payments to suspend. Following expiration of the deadline (or otherwise one month after suspension in cases where a suspension had been put in place), a retrospective decision on their UC entitlement since the *start* of their award was taken. Those who had not responded to the evidence requests were issued with decision notices stating that they had been overpaid *the entirety of their UC award over the previous 12 - 18 months* due to 'failure to provide ID evidence', usually amounting to many thousands of pounds. In the context of the social security decision-making legal framework, this amounted to DWP decision-makers concluding that they had established, on the balance of probabilities, that the department had made 'a material mistake of fact' when accepting that individual's claim at the start of the pandemic, namely, that the claimant was not 'who they said they were'.[103] In taking these decisions as part of this reverification exercise, it is not clear that any regard was had to the verification processes which *were* carried out by the Department on such claims when the UC entitlement decisions for these claimants were first made. For example, when reviewing the decisions, decision-makers did not appear to refer to whether claimants had successfully verified their identity using the online government Verify or Confirm Your Identity processes, or whether their data had been automatically cross-checked using the verification API. Other factors such as claimants having extensive and accessible digital DWP records relating to other benefits, having attended telephone appointments with DWP staff at the beginning of their claim or more recently which gave no cause for suspicion, or their tax credits award being terminated when they started their UC claim (which, had this happened as a result of a fraudulent UC claim made their name would surely have flagged to an impersonated

[102] Child Poverty Action Group, 'Demands to Repay: the impact and legality of the DWP's reverification of UC claims' (2022) <https://cpag.org.uk/policy-and-campaigns/briefing/demands-repay-impact-and-legality-dwp-reverification-uc-claims> last accessed 17 June 2022.

[103] Department for Work and Pensions response to Daphne Hall (rightsnet thread 17067, post 81, 17 November 2021) <rightsnet.org.uk> last accessed 17 June 2022. Even putting aside whether an otherwise unsuspected claimant missing a deadline to provide requested evidence is sufficient to establish this conclusion on the balance of probabilities, it is arguable that this is not properly a 'material mistake of fact' under the relevant legislation and this point may need to be considered by the tribunal in future.

claimant that something had gone wrong and HMRC/DWP would have been contacted accordingly) do not appear to have featured as relevant considerations to be taken into account.

The impact on claimants affected by the reverification exercise was significant and is still ongoing many months after decisions on their UC awards were made. For claimants who did not see the digital decision notices uploaded to their online journals, the first time they became aware of the revision of their initial UC entitlement decision and the purported overpayment was a physical letter sent by post from DWP Debt Management team stating they owed thousands of pounds and that recovery would be progressed, either through agreed payments, or else through earnings attachment orders or by third party debt collection agencies. In total, DWP found 'an element of incorrectness' in 125,000 cases.[104] The process for requesting a mandatory reconsideration of the decisions made under the reverification exercise was opaque, given that where an award was terminated the claimant's UC account was 'closed' and their online journal was frozen at the same time decisions were issued, meaning they could no longer use it to communicate with the Department. The UC address for sending mandatory reconsideration requests by post was not included on the DWP Debt Management letters sent out by post. For the 14,500 plus people (as at July 2022) who did manage to navigate the necessary processes to request a mandatory reconsideration,[105] many were faced with waits of several months or more for their request to be considered. Some received negative mandatory reconsideration details because they failed to answer calls from withheld numbers when decision-makers tried to contact them to obtain the initially requested evidence as part of the reconsideration process. In the meantime, the recovery of purported overpayments are progressed whilst mandatory reconsiderations or subsequent statutory appeals are pending, in line with DWP's recovery policy for UC overpayments.

This type of scenario is not new in welfare benefits administration. There are echoes in both DWP's reverification exercise and the work of the Risk Review Team of the scandal that befell HMRC when it outsourced tax credit compliance checks to an American contractor called Concentrix. The flawed exercise carried out by Concentrix was designed to enhance HMRC's existing programme targeted at preventing and detecting fraud and error in tax credits awards and, under its contract with HMRC, Concentrix was responsible for examining risk in a proportion of all tax credits claims, either during the tax year or as part of the renewals process at the end of the tax year.[106] Concentrix staff collected and assessed evidence on claimants' circumstances to make a decision on whether or not the awards were accurate, then made changes or stopped awards accordingly. In total, 12% of investigated tax credits awards were adjusted or terminated. Shortly after the exercise had concluded, 39% of those cases had been the subject of mandatory reconsideration (internal review) requests by claimants, and 85% were of those subject to a mandatory reconsideration were upheld in

[104] Answer by David Rutley MP (Parliamentary Under-Secretary (Department for Work and Pensions) of 7 July 2022 to written question UIN 29856, tabled by Sir Stephen Timms MP on 4 July 2022.

[105] ibid.

[106] National Audit Office, *HM Revenue & Customs, Investigation into HMRC's contract with Concentrix*, *Report by the Comptroller and Auditor General* (HC 2016-17 915), 6.

the claimant's favour.[107] Of those which were not overturned on mandatory reconsideration but made it as far as a statutory appeal to an independent tribunal, 80% of those appeals concluded at the time of the NAO's investigation had been upheld in the claimant's favour.[108] There are numerous reasons why claimants might not have requested a mandatory reconsideration or, if not successful on mandatory reconsideration, might not have proceeded to an appeal, even if they disagreed with the Concentrix decision on their award. As such, there is no way of knowing the total number of negative decisions which were wrongly made.

There have been myriad criticisms of this exercise, made by the Comptroller and Auditor General, Public Accounts Committee and Work and Pensions Committee in their reports following investigation into the exercise, and issues with the exercise have also been analysed from an administrative justice perspective.[109] Criticisms of the exercise included poor customer service, inadequate training of Concentrix staff and the structure of the contractual relationship between HMRC and Concentrix which involved a 'payments by results' mechanism which gave Concentrix a financial incentive to terminate claims. Between November 2014 and mid-December 2016, HMRC paid a total of £86,815 in compensation for complaints relating to cases handled by Concentrix. The majority of these payments were in recognition of the worry and distress claimants faced as a result of going with tax credits for between six and eight weeks, with some addressing actual financial loss and other compensation. The Work and Pensions Committee recognised that vulnerable people lost benefits to which they were entitled as a consequence of avoidable failures and that the exercise caused unnecessary hardship and distress.[110]

Although many of the identified issues with the exercise related to the outsourcing model used by HMRC, there was another feature of the administrative model used which received relatively little scrutiny or comment. Part of the exercise which related to changes of circumstances used an automated system in HMRC contact centres to identify anomalies when changes are reported over the phone by claimants.[111] This 'High-Risk Change of Circumstances' process was tested by HMRC in pilot stage prior to the Concentrix exercise in relation to childcare and children, and in the Concentrix exercise this process was also applied in relation to identifying anomalies in reported work and hours and undeclared partners. HMRC sent cases they had identified using predictive analytics to Concentrix, who then filtered out a subset of these 'risky' cases based on its own analytics using data-matching with third parties, including data from credit reference agencies.[112]

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[107] Robert Thomas, 'Does Outsourcing Improve or Weaken Administrative Justice? A Review of the Evidence' [2021] Public Law 542, 15.

[108] National Audit Office (n 104) 24.

[109] Joe Tomlinson and Robert Thomas, 'Justice outsourced: why Concentrix's tax credit mistakes matter' (*Democratic Audit UK*, 20 September 2016); Robert Thomas, 'Does Outsourcing Improve or Weaken Administrative Justice? A Review of the Evidence' [2021] Public Law 542.

[110] Work and Pensions Committee, *Concentrix* (HC 2016-17 720).

[111] National Audit Office (n 104) 21.

[112] National Audit Office (n 104) 22.

This technological aspect of the exercise was central to the exercise in the sense that one of HMRC's key reasons for engaging a private sector company to carry out the exercise, in addition to adding manpower, was to bring access to the third party datasets and analytics skills used to identify the targets.[113] Other methods of risk profiling were also applied to claims and it was a contractual requirement for Concentrix to 'innovate' in its risk analysis to improve the identification of high-risk cases for their further investigation.[114] HMRC had previously conducted a pilot with credit reference agencies where 20,000 tax credit claims with 'some evidence of an undeclared partner' were ranked by the agencies into high, medium and low risk cases, and claimants contacted accordingly.[115]

Despite their comprehensive reports on the Concentrix exercise, it appears that none of the Comptroller and Auditor General, Public Accounts Committee, or Work and Pensions Committee seriously engaged with whether the initial selection of cases targeted for investigation using two rounds of predictive analytics in this way was appropriate. The Work and Pensions Committee did address the process used for the selection of cases to an extent;[116] the Committee's report highlighted that whilst the evidence from a senior civil servant was that HMRC was cognisant that not all of the targeted awards would be incorrect in some way, on the other hand Concentrix was only allowed to not investigate cases passed to them if they determined there was *zero* risk of fraud or error, based on analytics from HMRC and the risk analysis based on the third party data. In an exercise which was conducted in relation to a benefit where the vast majority of claimants overall are already women, it does not appear to have been properly acknowledged from the outset that risk factors relating to childcare and undeclared partners might have resulted in a target group which was yet further skewed in terms of sex.[117]

Revisiting the HMRC/Concentrix exercise through the lens of automation raises further questions which do not appear to have been examined as part of the scrutiny it faced at the time. Evidence from the Low Income Tax Reform Group suggested that decision-makers tended to give more weight to the financial data

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[113] Public Accounts Committee, *Oral evidence: HMRC's contract with Concentrix* (HC 2016-17 998), Q57.

[114] National Audit Office (n 104) 17, 22.

[115] Sanjay Mackintosh and Jonathan Lloyd-White, *Efficiency without deficiency: Tackling fraud and error in the public sector* (Cabinet Office and HMRC) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/60956/Fraud-and-Error.ppt> last accessed 17 June 2022.

[116] Work and Pensions Committee (n 108) 27.

[117] Public Accounts Committee, Oral evidence: Quality of Service to Personal Taxpayers (HC 2016-17 78), Q116. The impact on single parent claimants (who are overwhelming women) was to an extent acknowledged after the event, partly as a result of individual cases being raised - for example, in one case a single mother had already been investigated and successfully verified to HMRC 2 years previously that she was no longer in a relationship, despite the existence of a mortgage link to her ex-partner's name, was required as part of the Concentrix exercise to provide further evidence to prove her circumstances once again; she had difficulty obtaining this evidence from an uncooperative, violent and abusive ex-partner. Other groups with protected characteristics may also have been disproportionately impacted: Advice Northern Ireland shared evidence with the Work and Pensions Committee that migrants who had lived in shared accommodations at early stages of their residency in the UK were more likely to have financial histories which meant they would be flagged for investigation (Work and Pensions Committee (n 108) 29).

from credit reference agencies even when presented with contrasting evidence provided by claimants.[118] One such example of this was the example of a 19-year-old single mum having her tax credits suspended because she was suspected, on the basis of third party credit reference data analysis, of being in a relationship with a 74-year-old former tenant who had since died. If this was the case, it is possible that data intended for use in predictive analytics as a risk indicator to identify a group of higher risk cases from the overall tax credits caseload, might also have used to draw conclusions by human decision-makers as to individual's facts, thus requiring claimants to produce weighty and substantial evidence above what would normally be required, to rebut these provisional conclusions and 'prove a negative'.[119] The use of predictive analytics and its outputs in relation to individuals was not disclosed to claimants in the communications they received, meaning that there was no opportunity to correct or explain incorrect data which might have led to their award being investigated.[120] In others words they were not aware of what 'case they had to answer' as the investigation of their award was ongoing. HMRC provided no further cases to Concentrix from September 2016 and terminated the contract early in response to criticisms of the exercise and its dissatisfaction with Concentrix's 'customer service', but High-Risk Change of Circumstances processes were continued by HMRC in-house after the conclusion of the contract.[121]

Having considered some aspects of algorithmic bureaucracy in the welfare benefits and social security context, both through the use of advanced technologies, and in the particular areas of the highly automated universal credit system and fraud and error prevention and detection, the changing nature of administration, and the differences between the 'street-level' and the 'system level' bureaucratic environments have been explored. This illustration leaves us well placed to consider, in section IV, the role of judicial review in the context of algorithmic bureaucracies, and more particularly, explore this further through consideration of an example in the social security context.

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[118] Work and Pensions Committee (n 108) 30.

[119] As a matter of law under the relevant social security legislation, the burden of proof in High-Risk Change of Circumstances interventions lies with HMRC (*NI v HMRC* [2015] UKUT 0490 (AAC)). The legal test for 'living together as husband and wife or civil partners' (ie, the test which is relevant for determining whether someone should have a single or couple tax credits award and which was relevant to those who were identified as potentially having undeclared partners) is complex, and a shared financial connection is not sufficient for establishing that test is met.

[120] Public Accounts Committee, *HMRC's contract with Concentrix* (HC 2016-17 998), 10. Work and Pensions Committee (n 108) 49).

[121] National Audit Office (n 104) 55.

# IV: Judicial review and its relationship with algorithmic bureaucracies: an example from the digital welfare state

A relatively small and targeted body of empirical research has sought to study the impact that judicial review has on bureaucracy. Much of that research in the UK context has focused on the impact of judicial review on administrative and front-line decision-making.[122] Taking an interdisciplinary approach, socio-legal studies in this area have involved careful observation and analysis at a micro-level to explore the impact of judicial in specific public authority settings. As Hertogh and Halliday observe, this predominantly 'bottom-up' approach, which is focused on how public officials interact with the law, can be contrasted with 'top-down' approaches more commonly found in political science, with their broader-based focus on the role of the courts in influencing societal and political shifts.[123]

Within the field of judicial review impact studies, consideration has rightly been given to the nature and scope of what is meant by the term 'judicial review'. Judicial review can be viewed as broader than judgments of the courts as to the lawfulness of particular public authority decisions taken in particular contexts, to include the process - and threat - of litigation itself. It can also refer to public law principles as, having been expounded by the courts in the process of assessing lawfulness in particular contexts, providing a more general normative framework for public sector decision-making. Judicial review has often been associated with a form of individualised justice, and as a way of balancing individual rights and concerns against the wider public interest and other considerations, but this is a simplification. There have been numerous attempts to delineate between different types of judicial review litigation. One distinction which has been drawn is between 'bureaucratic' judicial review and 'policy' judicial review.[124] Bureaucratic judicial review is directed at challenging a decision made by a public body in relation to one or more individuals (or to a lesser extent corporate entities), based on the facts and circumstances of the claimant(s). Broadly speaking, the decision that is the subject of challenge in bureaucratic judicial review has a direct impact on the individual claimants involved in the litigation, though this is not necessarily to say that there cannot be broader indirect impacts arising from the litigation. Nason has suggested that approximately half of the applications made to the Administrative Court of England & Wales concern individual grievances against 'street-level bureaucratic' decision makers.[125] Conversely, the 'policy' judicial review category (also referred to as 'high-profile' judicial review by Cane) comprises of cases which engage issues which impact on others who are not involved in the litigation, typically through engaging some wider question of law or practice. Categorising judicial reviews

[122] For example see Simon Halliday, Researching the "Impact" of Judicial Review on Routine Administrative Decision-Making in D. Cowen (ed.) Housing: Participation and Exclusion (Dartmouth 1998); Genevra Richardson and David Machin, 'Judicial Review and Tribunal Decision-Making: A Study of the Mental Health Review Tribunal' [2000] Public Law 494; Maurice Sunkin and Kathryn Pick, 'The Changing Impact of Judicial Review' [2001] Public Law 736.

[123] Marc Hertogh and Simon Halliday (eds), *Judicial Review and Bureaucratic Impact: International and Interdisciplinary Perspectives* (CUP 2004), 2.

[124] Peter Cane, 'Understanding Judicial Review and its Impact' in Marc Hertogh and Simon Halliday (eds), *Judicial Review and Bureaucratic Impact: International and Interdisciplinary Perspectives* (CUP 2004), 18–19.

[125] Sarah Nason, *Reconstructing Judicial Review* (Bloomsbury Publishing Plc 2016), 2 - 3.

along these lines is not straightforward or clearcut. As Bondy, Platt and Sunkin recognise, it is not always easy to determine whether a claim has implications beyond the claimant's case and cases with wider public interest impacts may arise as a result of claimants seeking redress for themselves.[126] In that study, the authors claimed that their findings supported their categorisation of claims into 'own fact' cases, 'procedure or policy' cases, and 'wider public interest' cases.[127]

With the advent of algorithmic bureaucracy, there is a question as to whether the delineation between different types of judicial reviews might become further blurred or if the distance between the categories of 'own fact' or 'bureaucratic' judicial review on one hand, and 'policy' or 'wider public interest' cases, on the other hand, might narrow. The reason for this would be because in algorithmic bureaucracies the frequency of opportunity for one-off errors of law, inappropriate exercise of discretion or poor decision-making on the part of an overstretched, undertrained or biased officer in an individual case decreases. We cannot rule out the existence of occasional malfunctions of technology which are more akin to one-off mistakes which might arise in purely 'bureaucratic' cases in the more traditional sense. Nonetheless, it is likely that judicial review challenges in algorithmic bureaucracies, in particular those that reach judgment stage, will increasingly concern an aspect of an integrated automated system that cannot be easily 'hived off' and be considered in isolation. There may, therefore, be inadvertent challenges to broader policy or procedure, where an 'own fact' challenge motivated by the impact on an individual happens upon a systemic issue within an automated decision-making system.[128]

There has already been recognition that the changing nature of government is an important variable in the study of the impact of judicial review.[129] For that reason it is important for us to ask which of the previously

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[126] Varda Bondy, Lucinda Platt and Maurice Sunkin, 'The Value and Effects of Judicial Review: The Nature of Claims, their Outcomes and Consequences' (Public Law Project 2015), 22.

[127] Varda Bondy, Lucinda Platt and Maurice Sunkin, 'The Value and Effects of Judicial Review: The Nature of Claims, their Outcomes and Consequences' (Public Law Project 2015), 22. Of a dataset of 502 cases which reached judgment, 75% were considered to be 'own fact' cases, 18% to be 'policy or practice' cases and 8% to be 'wider public interest' cases (ibid, 60).

[128] The reference to 'systemic issues' here is intended to include cases in which traditional judicial review grounds are applied to an individual decision which has arisen as a result of a broader or wider issue beyond the decision itself. It is therefore not limited to the 'systemic' mode of review directed at establishing if there is a systematic unfairness or illegality in the way an administrative system or policy operates. The line of case law emerged from *R (Refugee Legal Centre) v Secretary of State for the Home Department* [2004] EWCA Civ 1481, [2005] 1 WLR 2219 and includes *R (Detention Action) v First-tier Tribunal (Immigration and Asylum Chamber) and ors* [2015] EWCA Civ 840, [2015] 1 WLR 5341 and *R (Woolcock) v Secretary of State for Communities and Local Government* [2018] EWHC 17 (Admin), [2018] 4 WLR 49. The test it provides for assessing a policy or system on the basis of whether it was 'inherently unfair' or 'incapable of being operated in a proportionate way in all or nearly all cases' has now arguably been assimilated with the test in *Gillick v West Norfolk and Wisbech Area Health Authority* [1986] AC 112 following the Supreme Court judgments in *R (A) v Secretary of State for the Home Department* [2021] UKSC 37 and *R (BF (Eritrea)) v Secretary of State for the Home Department* [2021] UKSC 38 and so how future 'systemic' challenges will be viewed by the courts remains to be seen.

[129] Marc Hertogh and Simon Halliday, 'Judicial review and bureaucratic impact in future research' in Marc Hertogh and Simon Halliday (eds), *Judicial Review and Bureaucratic Impact: International and Interdisciplinary Perspectives* (CUP 2004), 278. This is evidently not the only variable to be taken account of when assessing the impact of judicial review

identified factors influencing how judicial review impacts government will continue to be relevant in algorithmic bureaucracies and, if so, whether they will continue to apply in the same way. This question is relevant for digital teams working within public bodies which, when designing and developing these systems, might seek to be aware of legal constraints they may encounter and principles of public administration which the systems they are creating might be called upon to emulate. It is also relevant for policymakers in public bodies, in so far as they might wish to be aware of any external factors which might impact on the implementation of those policies, such as litigation which has implications for the mode of delivery of their policies. Lawyers representing claimants who have been adversely effected by automated decision-making systems or defendants who have deployed these systems may be called upon to understand the technological context in which decisions have been taken, in so far as it might impact upon the remedy sought or the propensity for settlement. Depending on the findings of future studies of the impact of judicial review on algorithmic bureaucracies, it may also become relevant for actors within administrative justice systems such as the tribunals and ombuds services, in so far as changes in the impact of judicial review on administration could potentially have consequential implications for their caseloads. Finally, for the body of regulators, governance professionals and lawmakers tasked with designing other accountability mechanisms attaching to automated decision-making in the public sector, in so far as impact studies identify the limitations of judicial review in affecting public administration in algorithmic bureaucracies, it may highlight areas which require alternative effective supervision.

There has been significant scepticism about the capacity of judicial review as a mechanism by which the standards of public administration can be improved, as well as its influence on public administration more broadly. Speculation on the reasons for this have included the relatively small number of cases before the Administrative Court compared to those of the tribunals or complaints systems.[130] Specific barriers to the implementation of judgments have also been identified such as engrained 'cultures of refusal' of street-level bureaucrats and resource limitations, as well as the existing policy priorities and goals of public authorities. On the other hand, the contribution of judicial review in promoting a 'public service ethos' in local authority

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but it is of most relevance for the purposes of this thesis. Another potential variable relevant for the purposes of this discussion is the extent to which traditional judicial review grounds continue to function as an effective means of reviewing automated decision-making. The answer to this question is likely to evolve over time but the presumption in this thesis is that courts will adapt to how they engage with automated decision-making and traditional judicial review grounds will continue to provide a basis for an effective supervisory jurisdiction over automated decision-making. Early indicators, such as *R (Bridges) v Chief Constable of South Wales Police & ors* [2020] EWCA Civ 1058, [2020] 1 WLR 5037 support this presumption. There are other variables beyond the scope of this thesis which may also change the impact of judicial review over time, such as the availability of legal aid, access to legal services providers and forthcoming substantive or procedural reform (including the commencement of sections 1 and 2 of the Judicial Review and Courts Act 2022) (see also n 21).

[130] This is even more so the case if you consider that only a small proportion (around 8%) of all judicial review applications reach a final hearing (analysis of data in Progression of all judicial reviews against all departments 2014 - 2020, MoJ COINS database). For earlier discussion of this feature of judicial review proceedings see Varda Bondy and Maurice Sunkin, *The Dynamics of Judicial Review Litigation: The resolution of public law challenges before final hearing* (Public Law Project, 2009). The numbers of judicial review applications filed in the Administrative Court of England & Wales has been gradually declining over recent years. There were 2,332 applications for judicial review made in 2021, down from 2,835 in 2020 and 3,383 in 2019. The average number of applications lodged for the period 2014 - 2021 is 3,674 per year (MoJ COINS database).

settings has been recognised[131] as well as its influence as a risk to affecting reputation negatively.[132] Similarly, it has been observed that 'judicial review can act as a form of shock, alerting authorities to gaps or responsibilities that demand a much more conscious reflection on what is delivered and the systems in place'.[133] At a time when there is a risk of a public trust deficit in automated decision-making and regulation and governance of AI is struggling to keep up with its real-world deployments, the threat of judicial review may have a role to play as a means of encouraging reputational considerations and as a way of forcing caution or reflection by public bodies introducing new technologies. As highlighted in section II, new values, design principles and cultures can be seen in emerging algorithmic bureaucracies, such as through a focus on 'user experience' and agile and iterative ways of implementing change. It may be that an evolution of the 'public service ethos' which reflects these features, has both the flexibility, and a need, to also incorporate public law principles as expounded through judicial review. Similarly, previously identified barriers to the influence of judicial review may also evolve. For example, where the working assumption within administrative environments is that systems will constantly iterate and where teams are used to working in agile environments, resistance to change may be decreased and the resources needed to implement change may be lessened.

The question of whether the capacity of judicial review to impact bureaucracies changes when administration is carried out by predominantly automated decision-making is both complex and broad. Likewise is the consideration of what any such changing dynamics might entail. For these questions to be answered fully, it will ultimately require detailed empirical work to be carried out in a range of public sector arenas, along the lines of the impact studies which have previously contributed to the understanding of the role of judicial review in traditional administrative decision-making environments. However, it is helpful to the current project of theorising how this relationship may change to explore it further through an extended case study. In section III, the concept of algorithmic bureaucracy was explored in the context of the digital welfare state. By now examining a specific judicial review case brought within that environment - the *Johnson* case - further steps towards identifying some possible starting points for subsequent empirical studies can be made.

[131] Lucinda Platt, Maurice Sunkin, and Kerman Calvo, 'Judicial Review Litigation as an Incentive to Change in Local Authority Public Services in England and Wales' (2010) Journal of Public Administration Research and Theory 20 i243.

[132] Platt, Sunkin and Calvo (n 129), i247.

[133] Platt, Sunkin and Calvo (n 129), i253.

**Impact of judicial review in the digital welfare state - the *Johnson* case**

This case considered two linked judicial review claims brought on behalf of four women who were in receipt of universal credit on an ongoing basis, alongside their incomes from their respective jobs.[134] The claimants had, independently from each other, sought advice because they were all experiencing large fluctuations in the amount of universal credit they received in respect of certain universal credit monthly assessment periods, despite their earnings from work and other circumstances remaining constant. This meant that, from time to time, their universal credit payments dropped significantly and, as each of the women were sole primary carers for their children, this had a significant effect on them and their families including cash flow difficulties which caused problems with them paying rent, utilities and other bills. Thus, although the case had broader implications than the claimants' own benefits decisions, as explained in detail below, it came about initially due to their individual experiences and a desire from them for their own universal credit to be calculated fairly.

The reason for these fluctuating universal credit amounts was identified from the outset of the judicial review challenges, and prior to this by the claimants themselves, as being a consequence of the way that the claimants' regular, monthly paid wages from their employers interacted with their monthly universal credit assessment period. A key thing that the claimants had in common with each other was that their universal credit assessment periods started, and ended, around the same time in the month as they were paid their wages by their employers.[135] The problem arose when the claimants received two lots of their monthly wage packets from their employers in a single universal credit assessment period - one right at the beginning of the assessment period and one right at the end. This occurred when the dates that they received payment of their wages from their employers shifted slightly. These shifts were either due to their usual fixed monthly pay dates (eg. 25th of the month) falling on a bank holiday or weekend, meaning that they were paid slightly early, or because they were paid on, for example, the 'last Friday of the month'. When this occurred, the 'double wages' assessment period would be preceded or followed by a 'no wage' assessment period. As a result, for a 'double wages' assessment period they would receive a significantly reduced universal credit amount, whereas for a 'no wage' assessment period they would receive more universal credit. A useful shorthand for this

[134] Three of the women were represented by Child Poverty Action Group, and the fourth by a private law firm (Leigh Day). The two cases (one brought on Ms Wood, with Ms Barrett and Ms Stewart joined to the claim and one brought by Ms Johnson) were linked in the Administrative Court and heard together in both the High Court (*R (Johnson & ors) v Secretary of State for Work and Pensions* [2019] EWHC 23 (Admin), [2019] ACD 38 ('*Johnson* HC') and Court of Appeal (*Secretary of State for Work and Pensions v Johnson & others*) [2020] EWCA Civ 788, [2020] PTSR 1872 ('*Johnson* CA').

[135] UC assessment periods run from the same date each month (starting on the first day of entitlement) until the preceding day the next month (eg. if a claim is made on 5th August, the claimant's assessment period will run from 5th of each month to the 4th of the next) (Universal Credit Regulations 2013, SI 2013/376, reg 21(1)). There is a special provision which provides that if the first day of entitlement is the 31st of a month, then each assessment period will start on the last day of the month, to take account of months that have fewer than 31 days (Universal Credit Regulations 2013, SI 2013/376, reg 21(2)(a)). There is also provision for when the first day of entitlement is the 29th or 20th of a month, so that in February the assessment period will begin on 27th or, in a leap year, the 28th. See also *Johnson* HC [32].

phenomenon is the 'pay date clash issue'.[136] As a 'hyper-means tested' benefit, universal credit is deliberately designed to change how much benefit is paid from month to month, based on the changing circumstances of claimants, including the level of earnings they have from work. But for the group of claimants experiencing the pay date clash issue, from their perspective at least, their circumstances and earnings from work were *not* changing, but the universal credit system calculated their benefit entitlement as if they were.

Attempts to resolve the issue by the claimants included them asking their employers to move their pay dates, but such requests were unsurprisingly refused. One of the claimants ended her universal credit claim and made a new claim on a date which fell well away from her pay date to try to get a different assessment period date and avoid the pay date clash issue. This did not assist because, in cases where the claimant continues to meet the basis conditions of entitlement for universal credit, any new claim made within six months of a claimant's previous award ending will have the same assessment period dates as the previous award, irrespective of when the re-claim is made.[137]

The claimants sought judicial review of the decisions made in respect of the 'double wage' assessment periods they had experienced. Ms Woods characterised the decision as 'an ongoing decision not to amend the claimant's assessment period for universal credit purposes every time that two monthly wage payments fall to be included in one assessment period'.[138] It was also characterised in respect of one claimant as the Secretary of State's decision to uphold her decision to calculate the claimant's entitlement in an assessment period based on the day they applied for universal credit. The Secretary of State maintained at the pre-action stage, and throughout the proceedings, that the decisions had been taken in accordance with the statutory framework, given that the rules on how a claimant's earned income in each universal credit assessment period is calculated and affects the amount of benefit they receive at the end of the period are set out in secondary legislation.[139] The claimants did not dispute that the legislation, as it stood at the time of the claims, required the decisions to be made as they had been. In turn, the legislation mirrored the way the universal credit system had been built to function around fixed monthly assessment periods. This meant that, from the Secretary of State's perspective, the claimants were effectively challenging not only the individual decisions taken in respect of their 'double wage' assessment periods and the ongoing maintenance of those decisions, but also both the

[136] The Court of Appeal in its judgment refers to this issue as 'the non-banking day salary shift' (*Johnson* CA, [2]). This is somewhat of a misnomer given that for those who are paid by their employers on the 'last Friday on the month' or similar, their 'usual' or 'contractual' pay date never falls on a non-banking day, but nonetheless can shift slightly from month to month. It is uncontroversial that this group fall within the scope of the Court of Appeal's judgment, despite the reference term used. An equally good shorthand term is 'the pay day problem' as adopted in Jack Maxwell, 'Judicial Review and the Digital Welfare State in the UK and Australia' (2021) 28 Journal of Social Security Law 94.

[137] Universal Credit Regulations 2013, SI 2013/376, reg 21(3C).

[138] *Johnson* HC, [19].

[139] The detailed calculation method of earned income is contained in Universal Credit Regulations 2013, SI 2013/376, chapter 2 of part 6 (discussed in more detail below). Universal Credit Regulations 2013, SI 2013/376, reg 22 sets out how that earned income affects the claimant's universal credit amount in any assessment period. See also *Johnson* HC, [33].

legislation and a core architectural, and highly automated, aspect of the universal credit system itself - the monthly assessment period. Whilst is not unusual in social security for there to be detailed legislation prescribing rules for benefit entitlement, the fact that in universal credit the legislation was developed to reflect the heavily automated technical system that delivered it meant that there was an extra dynamic at play in the litigation which would not normally be present if the mode of delivery was manual.

The method of calculating universal credit amounts starts with a calculation of a claimant's 'maximum amount' of universal credit for an assessment period, comprising the sum of all the elements of universal credit they are eligible for. This maximum amount includes an amount for their standard allowance and any amounts for children, housing costs, caring responsibilities and limited capability for work and work-related activity.[140] The maximum amount is then reduced by any amounts to be deducted, which includes 'an amount in respect of earned income calculated in the prescribed manner'.[141] A 'general principle' of calculating earned income, as set out in regulation 54 of the Universal Credit Regulations 2013 is that 'the calculation of a person's earned income in respect of an assessment period is, unless otherwise provided in this Chapter [2 of Part 6 of the Regulations], to be based on the actual amounts received in that period'.[142] The formula for calculating the amount to be deducted in respect of earned income contains three variables; the amount of earned income received by the individual (or both members of the couple in joint claims) in the assessment period; whether the claimant is eligible for a 'work allowance' (the amount of earned income which can be retained in full before impacting the amount of universal credit payable) and the taper rate currently in place (the percentage of the remaining amount of earned income that will be deducted from the maximum amount of universal credit for the assessment period).[143] As all four claimants had childcare responsibilities they were all eligible for a work allowance. The relevance of this for the impact of the pay date clash issue on the claimants was that the decrease in universal credit which they faced in 'double wage' assessment periods was not offset by an equivalent increase in the 'no wage' assessment periods which accompanied them, due to the lost benefit of the work allowance in those 'no wage' periods.

It is useful at this point to consider how this method of calculating universal credit is operationalised by the Department for Work and Pensions, in practice. If the only thing that changes for a claimant from one assessment period to the next is the amount of earned income they receive, the monthly calculation process is fully automated, without any human intervention or decision-making involved. The 'universal credit

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[140] Welfare Reform Act 2012, s 8. The possible elements making up the maximum amount are amounts provided for under Welfare Reform Act 2012, ss 9 - 12 and the implementing regulations under those sections. See also *Johnson* HC [30]-[31]. The power to make regulations providing for the calculation or estimation of a person's earned income in respect of an assessment period is contained in para 4(1) of sch 1 to the Welfare Reform Act 2012 (*Johnson* CA, [7]-[8]).

[141] Welfare Reform Act 2012, s 8(3)(a).

[142] Universal Credit Regulations 2013, SI 2013/376, reg 55 contains the definition for 'employed earnings', ie. earned income which derives from a contract of service or in an office. Employed earnings broadly comprises amounts that are earnings as defined in the Income Tax (Earnings and Pensions) Act 2003, with a few variations (*Johnson* CA, [14]).

[143] At the time of the decisions challenged in the Johnson case this was fixed at 63%.

calculator', as the DWP termed it in its evidence in *Johnson*, automatically receives data inputs from the DWP's Real Time Earnings system to determine how much should be deducted from maximum amounts of universal credit as a result of a claimant's earned income for the assessment period. In order to obtain that earnings data, the universal credit system pushes an 'interest file' containing a set of national insurance numbers to HMRC's Real Time Information system via the Real Time Information-Universal Credit interface, on a daily basis.[144] The HMRC Real Time Information system then collates earnings information attached to those national insurance numbers (in so far as a match is established) and returns a subset of the data it holds to the DWP via the interface, four times daily.[145] Regulation 61(2) of the Universal Credit Regulations 2013 reflects this operational process and provides that for claimants whose employers are Real Time Information employers, 'the amount of the person's employed earnings from that employment for each assessment period is to be based on the information which is reported to HMRC under the [Pay As You Earn] Regulations and is received by the Secretary of State from HMRC in that assessment period' and 'for an assessment period in which no information is received from HMRC, the amount of employed earnings in relation that employment is to be taken to be nil'. There were certain limited exceptions to the general rule set out in regulation 61(2) of the Universal Credit Regulations 2013 which afforded the Secretary of State some discretion on how information received from the HMRC Real Time Information system could be treated. However, at the time of the *Johnson* litigation, these exceptions applied in specified limited situations which did not include the pay date clash issue faced by the claimants.[146] The deliberate narrowness of these discretionary powers in the legislation reflects the fact that any discretionary adjustments need to be exercised manually via adjustments to the calculations made by the automated system. These are usually at the request of claimants. The possibilities for such manual adjustments had deliberately been kept to a minimum, due to the DWP staff time needed to carry them out in the absence of an automated option. This suggests that some of the potential implications of algorithmic bureaucracies on discretion which have been identified by others, such as a curtailment of street-level bureaucrats' discretion by automated systems or the shifting of discretion from street-level bureaucrats to the system designers,[147] might in turn have knock-on effects for the role of judicial review.

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[144] *Memorandum of Understanding between HMRC (PT Ops) & DWP Universal Credit in respect of the Exchange of Information as a result of the Interface between RTI and UC* (MoU-UA-P0006, v 3.0 sign off date 4 November 2015), 4.

[145] Richard Pope, *Universal Credit: Digital Welfare* (Richard Pope Consulting 2020), 66 <https://pt2.works/files/universal-credit.pdf> last accessed 24 July 2022.

[146] At the time of the *Johnson* litigation the exceptions to the rule in regulation 61(2) included if the Secretary of State considered that the information from the employer was unlikely to be sufficiently accurate or timely (Universal Credit Regulations 2013, SI 2013/376, reg 61(3)(a)); if no information was received from HMRC and the Secretary of State considered this likely to be because of a failure to report (whether a failure of the computer system operated by HMRC, the employer, or some other person) (Universal Credit Regulations 2013, SI 2013/376, reg 61(3)(b)(i)); and if the Secretary of State considers that the information received from HMRC is incorrect, or fails to reflect the definition of employed earnings in regulation 55, in some material respect (Universal Credit Regulations 2013, SI 2013/376, reg 61(3)(b)(ii)). The Court of Appeal considered whether one of the exceptions in regulation 61(3) could apply to the *Johnson* claimants situation but concluded that it could not (*Johnson* CA, [44]).

[147] For example see: Noortje de Boer and Nadine Raaphorst 'Automation and Discretion: Explaining the Effect of Automation on how Street-level Bureaucrats Enforce' (2021) Public Management Review

Despite some understanding in the public domain of how earnings data flows into the universal credit calculator, as explained above, insight into the technology that underpins the calculator itself is limited. As Pope points out, public-facing benefit calculators created by civil society organisations to enable individuals to calculate how much universal credit they might be entitled to have been reverse engineered based on knowledge of the legislation and policy documents which set out how the calculations work, rather than by replicating the technology used internally by the DWP.[148] Data subject access requests made on behalf of individual claimants for their universal credit information provide a print-out of a screen headed 'automated calculation completed' for each of their assessment periods, with detail on the component parts used in the calculation for that assessment period that goes slightly further than the universal credit statements that claimants receive via their online account at the end of each assessment period. But the back-end workings of how that automated calculation is carried out are largely opaque.

Although the back-end workings of the universal credit calculator are not readily available, it is observable to an outsider that the monthly assessment period and the automated nature of the monthly calculation are fundamental features of the universal credit system. The Secretary of State's evidence in the *Johnson* case was that it was not possible for there to be an automated change to address the issue faced by the claimants and that the system would need to be rebuilt entirely for the solution to be automated. The evidence from senior civil servants was that the only way to address the issue absent a rebuild would be by way of manual intervention, taking around one and half hours of DWP agent time for each instance.[149] The Secretary of State recognised that the cost of changing the automated system was difficult to quantify but suggested in her evidence that it would require a new version of the UC calculator to be 'essentially rebuilt from scratch'.[150] Taken as a whole, the evidence was opaque as to what would be required: building another UC calculator to enable 'amending assessment periods' would increase the cost to the taxpayer 'at least by many hundreds of millions of pounds'.[151] Meanwhile an 'XL build for the purposes of costs of building that specific project through product design, service design and people prep training would be approximately £678,000, and delay roll out of UC for at least 5-6 months'[152] in addition to the cost of retaining the developer team for this additional period. And yet 'the lowest amount this would cost would be approximately £7.35 million'.[153] It is notable, for reasons that will become clearer when we consider the Secretary of State's response to the *Johnson*

<https://doi.org/10.1080/14719037.2021.1937684> last accessed 24 July 2022 which carried out empirical work to test the curtailment theory advanced in Aurelien Buffat, 'Street-level Bureaucracy and E-government' (2015) Public Management Review 17 149. See also Binns (n 46).

[148] Richard Pope, *Universal Credit: Digital Welfare* (Richard Pope Consulting 2020), 102-103.

[149] *Johnson* HC, [77].

[150] *Johnson* HC, [78].

[151] ibid.

[152] *Johnson* HC, [78] *citing* witness statement of Debbie McMahon dated 14 September 2018, [42] (copy held by author).

[153] *Johnson* HC, [78] *citing* witness statement of Niamh Parker dated 14 September 2018 (copy held by author).

CA judgment, that the references to 'rebuilding the calculator' and 'amending assessment periods' seemingly presumed a solution to the problem that would require the claimant's *assessment periods* to be changed, rather than different treatment of the earnings data that were reported by their employers. Possible solutions to the issue, put forward by the claimants, were dismissed in the Secretary of State's evidence as not viable, including a one off 'mini' assessment period[154] as a way of moving the claimants' assessment period dates going forward, averaging income across assessment periods, carrying over 'unused' work allowance and changes to the RTI feed from HMRC.

The focus on resisting change to the assessment periods of the claimants in order to resolve the issue they were facing may in part have been driven by the characterisation of the decision challenged, as referred to above. It is possible it was also influenced by the relief which was initially sought by the three of the claimants, which included a mandatory order requiring the Secretary of State to put in place a different assessment period for the claimants or otherwise amend their assessment periods, in order to avoid the pay date clash issue. The DWP's focus on the rigidity of the assessment period being a barrier to resolving the issue for the claimants was also evident in the DWP response to a complaint made by one of the claimants prior to proceedings commencing which stated:

> [T]he UC Full Service Computer System has not been built to readjust assessment periods once the assessment period has passed, as this was not intended due to it undermining the simplicity and consistency doctrine within UC. Doing this may require a complete system rebuild, which is a costly and resource intensive procedure.

As part of the complaint process, DWP reported that the UC Service Innovation Lead was consulted on whether changing the assessment period dates for the complainant would be an option and advised against implementing this. This highlights that the nature of existing constraints of technological system(s) and the costs of overcoming those constraints may be factors taken into account by public bodies responding to judicial review. This is perhaps unsurprising, given a similar factor may already have already existed in human decision-making contexts in judicial reviews challenges where the remedies sought involved large-scale policy changes or judgments otherwise required extensive or expensive changes for them to be implemented. Nonetheless, in circumstances where the nature of the specific part of the bureaucratic environments which is subject to challenge involve inflexible and 'hard-wired' or architectural aspects of automated systems, this may add a new dynamic. To the extent that changes to an automated decision-making system to resolve one issue might also have consequential implications elsewhere in the system, this adds a new form of complexity to the problem of resource allocation (both financial and staff time) which exists in traditional decision-making environments. As automated decision-making continues to become more pervasive, it will also be interesting to observe whether the converse could also be a relevant factor: in circumstances where the challenge relates

[154] The concept of a 'mini' assessment period already exists in Universal Credit Regulations 2013, SI 2013/376, reg 21A. But it can only be implemented at the outset of a UC claim, rather than mid-award as would have been required to solve the pay date clash issue.

to truly agile and iterative decision-making systems or more flexible aspects of systems, in respect of which updates and changes can be released rapidly, at scale, and without disruption to the existing live systems, there may be less resistance and fewer barriers to the influence of judicial review than in traditional administrative decision-making environments.

The High Court judgment in the *Johnson* case was handed down in January 2019. The Divisional Court comprising Lord Justice Singh and Mr Justice Lewis considered that there was a logically prior, more fundamental question to be answered before consideration could be given to the claimants' arguments. The claimants contended that the method of calculation as set out in the regulations led to irrational consequences for the claimants or failed to achieve the statutory purposes of the enabling provisions of the Welfare Reform Act 2012, with the result that it was *ultra vires*.[155] They also argued that the method of calculation gave rise to unlawful discrimination contrary to Article 14, read with Article 1 of the First Protocol, of the European Convention on Human Rights, on account of the loss of the benefit of the work allowance which affected them (which they would otherwise have been able to benefit from on account of their childcare responsibilities as lone parents). However, the key prior question identified by the Divisional Court was whether the relevant legislation, properly interpreted, did in fact require the Defendant to treat two months' wages received during one assessment period to be attributed solely to that assessment period, irrespective of the fact that the wage payments related to work done in two separate months.[156]

In construing the meaning of the regulations, the Divisional Court had regard to the broader context of the Welfare Reform Act 2012, the purpose of which is to confer entitlement to a benefit intending to enable those with limited means to meet their basis needs, and to facilitate or encourage people to work.[157] It also considered the more specific context, namely the way that earned income was deducted from universal credit maximum amounts, taking into account the work allowance and taper rate provided for in the regulations. The Court had regard to the precise wording of regulation 54 and regulation 22 of the Universal Credit Regulations 2013 which referred to the earned income amount being 'based on' the amounts received in an assessment period, rather than equal to that amount, and that earned income deducted from the maximum amount was 'in respect of' the assessment period, not expressed in terms of earned income *actually received* in the assessment period.[158] The Court concluded that the defendant had wrongly interpreted the relevant regulations in assuming that the claimants' wages for two different months received in a single assessment period were to be treated as

[155] *Johnson* HC, [39]. The reference to failing to achieve the statutory purpose refers to the arguments made on behalf of three of the claimants that the Secretary of State's actions constituted a breach of the *Padfield* principle (*Padfield v Minister for Agriculture, Fisheries and Food* [1968] AC 997). Ms Johnson also alleged a breach of the Public Sector Equality Duty under s.149 of the Equality Act 2010, dealt with by the Divisional Court in *Johnson* HC [64]-[67].

[156] *Johnson* HC, [6].

[157] *Johnson* HC, [44]-[45].

[158] *Johnson* HC, [53].

earned income in respect of that assessment period. Therefore, the decisions under challenge were flawed.[159] Given the Divisional Court's findings on the meaning of the legislation, which left scope for the claimants UC entitlement to be recalculated for the affected assessment period and future assessment periods, it was unnecessary to go on to consider the claimants arguments on irrationality and unlawful discrimination, which were premised on a different interpretation of the regulations.

The Secretary of State appealed the High Court decision to the Court of Appeal. As to the reasons for pursuing the case on appeal, commenting after the subsequent Court of Appeal decision, Neil Couling (Senior Responsible Owner for Universal Credit) said 'when we were asked why we appealed, it was because the [regulation] 54 decision [of the High Court] would have been extraordinarily disruptive to the system.'[160] On hearing the Secretary of State's appeal, the Court of Appeal took a different view from the Divisional Court when conducting the statutory interpretation exercise, and accepted the Secretary of State's submission that the Divisional Court's interpretation of the legislation raised a 'large number of questions about whether an adjustment would be appropriate in [other, non-identical] cases as well as in the instant cases'.[161] The unanimous Court of Appeal disagreed with the Divisional Court's conclusion when construing regulation 54 of the Universal Credit Regulations 2013, and found that attributing the meaning the Divisional Court gave to it - that income received in an assessment period is not necessarily treated as earned income in respect of the period in which it is received - would substantially undermine the scheme as Parliament intended it to operate.[162] Having concluded differently from the High Court on the meaning of the legislation, it was necessary for the Court of Appeal to go on to consider the arguments originally advanced by the claimants.

The Court of Appeal found that 'the [Secretary of State's] refusal to put in place a solution to this very specific problem' was irrational.[163] In the leading judgment, Lady Justice Rose agreed with the Divisional Court that the impact on the claimants was 'odd in the extreme'. The judgment considered the 'wide and frequent oscillations' in UC payments which the claimants faced and the impact on the families such as paying interest and bank charges arising from overdraft use and loans needed because of the cashflow issues that the reduced universal credit payments caused. In addition to the considerable hardship, Rose LJ recognised that perverse incentives affecting a claimant's employment choices, which had led to the claimants changing to jobs which were less suitable for their skills and qualifications or stopping work altogether until they can find an employer who has a pay date not close to their assessment period date. The loss of the benefit of the work allowance in several months each year and the recognition that this meant less universal credit overall was

[159] *Johnson* HC, [62].

[160] Work and Pensions Committee, *Oral evidence: Universal Credit: the wait for first payment* (HC 2019-21 204), Q248.

[161] *Johnson* CA, [37].

[162] *Johnson* CA, [35].

[163] *Johnson* CA, [107]. In light of the findings on irrationality, it was not necessary for the Court of Appeal to decide the human rights discrimination ground.

considered 'the most egregious aspect of the way the system works'.[164] The Court was not persuaded that the disadvantages of resolving the problem outweighed the consequences for the claimants of not doing so. Rose LJ was not convinced by the Secretary of State's evidence in so far as it was premised on the assumption 'that what would be needed would be a wholesale move away from automation and a return to the former method of manual calculation by DWP officers'.[165] Ultimately, she concluded that she could not accept that the programme could not be modified so as to detect the pay date clash issue when it arises, so that one of the payments could be moved into the next assessment period. The Court of Appeal replaced the Divisional Court's declaration with the following:

> The earned income calculation method in Chapter 2 of Part 6 of the Universal Credit Regulations 2013 is irrational and unlawful as employees paid monthly salary, whose universal credit claim began on or around their normal pay date, are treated as having variable earned income in different assessment periods when pay dates for two (consecutive) months fall in the same assessment period in the way described in the judgment.[166]

**DWP response to the Court of Appeal judgment**

Three days after the Court of Appeal judgment was handed down on 22 June 2020, the Parliamentary Under-Secretary of State for Work and Pensions confirmed in response to an urgent question in Parliament that the Department did not intend to appeal and that it was assessing the remedial options.[167] He stressed the difficulty of resolving the issue and noted 'it is not the simple click of a switch', particularly when the Department was facing increased demand as a result of the coronavirus pandemic. The minister confirmed the Department would 'begin the process of carefully considering possible solutions'. He went on to say that he was 'absolutely committed to finding a fix', despite the court not mandating any specific fix or action. Interim steps such as 'beefing-up' the Department's work with HMRC to ensure that the HMRC guidance to employers on when they should report employees' wage payments is clear were identified as being taken to reduce the numbers of people affected whilst the more substantial solution was being developed. This prompt decision not to appeal the Court of Appeal's decision and the public commitment to finding a way to implement the judgment was in contrast to the department's response to the High Court's judgment which was appealed on the basis it would have been 'extraordinarily disruptive' to implement. The Senior Responsible Officer who had given a witness statement as part of the proceedings later commented,

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[164] *Johnson* CA, [62].

[165] *Johnson* CA, [81].

[166] Order of the Court of Appeal dated 30 June 2020 in *Johnson* CA, <https://cpag.org.uk/sites/default/files/files/Johnson%20order.pdf> last accessed 24 July 2022.

[167] HC Deb 25 June 2020, vol677, col1455.

> I think it is possible to construct a solution to the issue raised in the court without breaking some of the core concepts and core design, which in effect is the judgment the Court of Appeal came to but effectively said "Neil, that's for you to sort not us"[168]

This suggests that the Department's thinking around the possible technical solutions had clearly progressed and evolved from their thinking at the time the judicial review challenge was defended on the basis that it was *not* possible to construct a solution to the problem, without breaking precisely some of those 'core concepts and core design' of the overall system, even on the parties' original interpretation of the legislation (which the Court of Appeal agreed with). But the willingness to implement the Court of Appeal judgment shown by the department also reflects the fact that it was more contained in its implications for the UC technical system, and less disruptive to a core architectural feature of the system - the assessment period - than the High Court judgment had been.

A few weeks after the initial response the Parliamentary Under-Secretary of State reiterated his commitment to finding a solution, but also raised that it presented an opportunity to resolve other issues:

> The Committee will know sometimes even my own frustration at how long it takes to get things in the UC programme and to get things built. Where we have a JR and we have committed, as I have, to find a solution, my ambition is to also look at whether a fix for one thing can also be a tool and a mechanism to address other issues, which will not be subject to JRs, but that the [Work and Pensions] Committee, stakeholders and others — That is why I want to explore it in more detail and make sure that we can address as many problems as possible as part of that system fix.[169]

This highlights the possibility that where compliance with a judicial review judgment requires action to be taken in respect of complex technical systems, public bodies may see this as an opportunity to revisit the system and make other changes at the same time as making those necessary to implement the judgment.

Around five months after the Court of Appeal judgment, the Secretary of State for Work and Pensions introduced amending regulations directed at rectifying the unlawfulness and, according to the explanatory note to the statutory instrument, implementing the *Johnson* judgment (the 'Earned Income Regulations').[170] The

[168] Institute for Policy Research Blog, University of Bath, *Universal Credit and couples: Policy issues* (5 October 2020) <https://blogs.bath.ac.uk/iprblog/2020/10/05/universal-credit-and-couples-policy-issues/> last accessed 30 July 2022.

[169] Work and Pensions Committee, *Oral evidence: Universal Credit: the wait for first payment* (HC 2019-21 204).

[170] Universal Credit (Earned Income) Amendment Regulations 2020, SI 2020/1138 (the 'Earned Income Regulations). The Earned Income Regulations came into force on 16 November 2020. Guidance was also introduced for DWP decision-makers (Department for Work and Pensions, *ADM Memo 27/20, The Universal Credit (Earned Income) Amendment Regulations 2020* (DMA Leeds November 2020) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/935532/adm27-20.pdf> last accessed 30 July 2022). There remains a question as to what tribunals should do when faced with appeals of decisions taken prior to the Earning Income Regulations being introduced in November 2021, whether before or after the Court of Appeal judgment. Arguably, a tribunal should not uphold an irrational decision. But it is unclear under what power an alternative decision might be taken. This may need to be resolved by the Upper Tribunal (AAC).

Earned Income Regulations amended regulation 61 (*Information for calculating earned income – real time information etc.*) of the Universal Credit Regulations 2013, giving the Secretary of State a discretionary power to reallocate one of the double monthly wage payments reported through the RTI system to a different universal credit assessment period for the purpose of 'maintaining a regular pattern'.[171] The Earned Income Regulations also introduced a power to make consequential adjustments to the calculation of a person's employed earnings 'as may be necessary to avoid duplication or to maintain a regular payment pattern'.[172] Alongside these legislative changes, the DWP also began to gather more information about the frequency of earnings payments when new UC claims were made, in order to improve their identification of potentially affected claimants.[173]

Initially, once the Earned Income Regulations came into force, the operationalisation of the 'solution' required claimants themselves to identify that they had been affected by the pay date clash issue and to raise it via their online UC journal to request one of their wage payments to be reallocated. Effectively, this meant that a (wholly automated) UC decision of the kind challenged by the claimants in *Johnson* would be made initially in relation to the assessment period in question, but, if the issue was identified by a claimant, then they could request a review of the decision and, if the decision-maker agreed that it was a *Johnson* situation, it would be changed. For situations where the *Johnson* criteria was met, this made the decision-making system as a whole a version of a 'human on the loop' system, where the output of the algorithmic system would prevail, unless queried by the subject of the decision (the UC claimant), and adjusted by a human decision-maker. Case Managers or other UC staff picking up these requests would refer them into the Department's 'Real Time Information dispute' process (described by the Parliamentary Under-Secretary of State for Welfare Delivery as a 'streamlined dispute process').[174] According to DWP, between 29 March 2021 and 30 August 2021, UC claimants had monthly-paid wages assigned to different assessment periods on 8,300 occasions under the new regulation 61 reallocation powers.[175] It is not known how many claimants on top of this were affected by the *Johnson* issue but did not realise or did not raise it with DWP during this period. Nor is it known how many claimants raised the issue but either faced 'gatekeeping' of the 'RTI dispute' process (ie.

[171] Universal Credit Regulations 2013, SI 2013/376, reg 61(6) as amended by the Earned Income Regulations.

[172] Universal Credit Regulations 2013, SI 2013/376, reg 61(7) as amended by the Earned Income Regulations.

[173] Prior to this the DWP already had access to pay frequency data as submitted by employers through the RTI system, however, this was only accessible by certain analysts, and was not generally visible to UC decision-makers and other front-line UC staff.

[174] Answer by Will Quince MP (then Parliamentary Under-Secretary of State for Welfare Delivery) of 14 June 2021 to written question UIN 10456, tabled by Justin Madders MP on 14 June 2021. DWP internal guidance issued after the introduced of the Earned Income Regulations states: '2 monthly earnings in 1 assessment period and late-reported earnings are now reasons for an RTI dispute and should be investigated using the to-do' (Department for Work and Pensions, 'Spotlight on: disputed earnings' (undated, copy held by author)).

[175] Answer by Will Quince MP (then Parliamentary Under-Secretary of State for Welfare Delivery) of 14 June 2021 to written question UIN 10456, tabled by Justin Madders MP on 14 June 2021; Answer by David Rutley MP (Parliamentary Under-Secretary (Department for Work and Pensions) of 25 October 2021 written question UIN 57096, tabled by Justin Madders MP on 15 October 2021. The double wage payment issue can potentially affect some claimants a few times a year depending on when their assessment period dates and employer pay dates fall, as such the number of instances of wage reallocations does not necessarily indicate the number of unique claimants affected by the issue.

were not referred to the 'RTI dispute' team by the UC staff who reviewed their online journal message querying their UC payment or dealt with their helpline query) or did not have their wage payments reassigned due to incorrect treatment of their case during the 'RTI dispute' process and then did not pursue the issue further on mandatory reconsideration or statutory appeal.

The process described above was a placeholder arrangement put in place by the DWP to implement the judgment 'as soon as was practicable', but was the not the full extent of the implementation response.[176] Around July 2021, just over a year after the Court of Appeal judgment, the DWP introduced an automated identification feature to identify cases of 'irregular earnings' (ie. *Johnson*-type cases where claimants receive two earnings amounts in one assessment period) with corrective action taken manually by Universal Credit Case Managers.[177] The intention of introducing this automated identification process was to 'allow [DWP] to proactively correct awards before they are paid, without the need for the claimant to raise the issue.'[178] This change amounted to a new operational approach as to how the Secretary of State exercises the discretionary power to reallocate monthly wage payments that was introduced by the Earned Income Regulations. This could still be described as a 'human on the loop' system given that, even for cases that are automatically flagged, absent a reallocation of wages by a human decision-maker, the output of the algorithmic system would prevail. However, the role of the claimant themselves in triggering the human intervention has in theory been removed.

Under this new operational approach, an effective automated identification process should, in theory, shift the burden of resolving the issue away from claimants, which the DWP recognise existed under the placeholder arrangements that required claimants to raise the issue themselves in order to have any chance of it being resolved. By automating the identification of an occurrence of the *Johnson* issue in a particular UC assessment period, for a particular claimant, one might also expect it to reduce any delay in a correct decision being made. If the system automatically flags the issue immediately after the assessment period ends, there is a window of up to seven days to make the necessary manual adjustments to ensure the claimant receives the correct amount of benefit on their usual universal credit payment date. Resolving the issue in that window prior to the claimant's universal credit payment date would, crucially, avoid a fluctuation in the claimant's UC amount occurring, which was a key factor in the Court of Appeal's reasoning. In the run up to the Christmas period in December 2021 - a time of year during which many employees get paid early due to the bank holidays - the DWP celebrated the changes introduced following *Johnson* as a positive improvement to the UC system

[176] Answer by Will Quince MP (then Parliamentary Under-Secretary of State for Welfare Delivery) of 14 June 2021 to written question UIN 10456, tabled by Justin Madders MP on 14 June 2021.

[177] Answer by David Rutley MP (Parliamentary Under-Secretary (Department for Work and Pensions) of 20 May 2022 to written question UIN 798, tabled by Justin Madders MP on 11 May 2022; Department for Work and Pensions *Touchbase newsletter* (27 August 2021) (copy held by author).

[178] UIN 10456 (n 174).

that 'ensur[es] stability for claimants when receiving their benefit'.[179] This echoed the positive messaging from DWP when introducing the system earlier in the year:

> Universal Credit has been improved with a new automatic process to ensure claimants receive more consistent benefit payments, even if their employer pays them early because of a bank holiday. DWP has changed its processes so that the Universal Credit system now automatically identifies claimants who receive a second monthly salary payment in one benefit assessment period. Staff will be able to move the second payment forward to the next assessment period in the system, ensuring the claimant's benefits don't fluctuate from one month to the next due to the system thinking a claimant has received increased wages in one month.[180]

Following this announcement, the Secretary of State was asked to confirm whether universal credit staff can assign one of those two payments backwards to an *earlier* assessment period, given the reference to staff being able to 'move the second payment *forward* to the next assessment period'.[181] In response, the Parliamentary Under-Secretary stated that the automated identification process ensures claimants receive their adjusted amounts of benefit 'without interruption in the vast majority of circumstances'.[182] However, it has since become clear that a limitation of the automated system is that if a monthly wage payment needs to be moved to an earlier assessment period (eg. a 'no wage' assessment period is followed by a 'two wage' assessment period and the first of the two wage payments needs to be reallocated to the prior assessment period) the automated process does not detect this, and the claimant will need to raise an RTI dispute and potentially apply for a mandatory reconsideration for the decision(s) to be corrected once they have received their universal credit payment statement for the month.

Some claimants therefore continue to face the *Johnson* issue, seemingly as a result of a combination of the automated identification process not picking up their case and due to encountering delays and difficulties with getting the issue rectified manually once they raise it with DWP staff. Given the recognition by the Court of Appeal that the fluctuations in the *Johnson* claimants' UC payments were 'perverse' and 'extreme' and caused 'considerable hardship', an automated system which results in similarly irrational decisions which are subsequently rectified manually through the mandatory reconsideration process arguably does not adequately address the issues faced by claimants in this position. It remains to be seen whether the automated identification process will be further improved and 'fine-tuned' to improve functionality to pick up cases which currently fall through the cracks, in accordance with the UC 'test and learn' philosophy. As things stand, the quality of

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[179] The DWP Touchbase newsletter dated 17 December 2021 stated: 'Monthly-paid Universal Credit claimants who have two payments in one assessment period as a result of an early payment do not need to worry. Thanks to changes we made to the rules, they can have the second payment moved to another assessment period. This ensures stability for claimants when receiving their benefit. When two monthly payments are received in one assessment period claimants should report it to their work coach.'

[180] Department for Work and Pensions, *Touchbase newsletter* (27 August 2021) (copy held by author).

[181] Answer by David Rutley MP (Parliamentary Under-Secretary (Department for Work and Pensions) of 25 October 2021 written question UIN 57096, tabled by Justin Madders MP on 15 October 2021.

[182] ibid.

decision-maker guidance, training, and support tools for DWP staff continue to play a role in ensuring that manual reallocations of wage payments are made in appropriate situations, and as quickly as possible, to minimise delays in claimants receiving their correct amounts of benefit. This continued role for front-line DWP staff indicates that some factors relevant to the impact of judicial review in more traditional administrative environments are likely, to a certain extent at least, to continue to be relevant for the impact of judicial review in algorithmic bureaucracies, so long as human decision-making plays a role within socio-technical systems.

In terms of financial impacts of the judicial review proceedings themselves on the defending government department, the Secretary of State was ordered to pay the claimant's legal costs at both High Court and Court of Appeal stage.[183] In relation to implementation, given that claimants affected by the *Johnson* issue suffering an overall net financial loss of universal credit due to the loss of benefit of the work allowance in 'no wage' payment assessment periods, it follows that there will also be an ongoing increased cost to the department in benefit paid out to those who were previously missing out on their full entitlement, though that amount is likely to be small in the scheme of social security budgets. As for administrative costs of implementing the judgment, the Department's witness evidence before the High Court and Court of Appeal was that the estimated cost of changes to the automated system was £7.35 million, as discussed above.[184] After introduction of the new process, the Parliamentary Under-Secretary indicated that the costs of the changes to the system 'were not readily identifiable for the implementation of the automated identification process as teams work in an agile way, and make a number of changes to specific parts of the system.'[185] Nor is it clear that the roll-out of UC has been in any way delayed by the changes which were made to implement the *Johnson* judgment,[186] though timelines for migrating legacy benefit claimants onto universal credit have been affected by the coronavirus pandemic.

The Department has made clear that its wider policies relating to the monthly universal credit assessment periods remain unchanged following *Johnson*, in that there are no plans to reform the overall structure of the monthly assessment period to address other inbuilt features of the earned income calculation which result in fluctuating amounts of UC for other groups of working claimants, such as those paid four-

[183] Order of the Court of Appeal dated 30 June 2020 in *Johnson* CA, <https://cpag.org.uk/sites/default/files/files/Johnson%20order.pdf> last accessed 24 July 2022.

[184] *Johnson* HC, [78].

[185] Answer by David Rutley MP (Parliamentary Under-Secretary (Department for Work and Pensions) of 1 December 2021 to written question UIN 80333, tabled by Justin Madders MP on 23 November 2021.

[186] *Cf. Johnson* HC, [78]. The Universal Credit Programme Dashboard immediately prior to the coronavirus pandemic in March 2020 cited 'judicial reviews/tribunal decisions' as one possible cause of the identified risk to the scaling of the rollout of UC from Autumn 2020. The risk was identified as arising if the planned level of automation was not achievable (Department for Work and Pensions, *Universal Credit Programme Dashboard: March 2020* (deposited 26 April 2022) <https://data.parliament.uk/DepositedPapers/Files/DEP2022-0377/28_-_March_2020_PB_Dashboard_R.pdf> last accessed 17 June 2022. Subsequent Programme Board papers for the period following the Court of Appeal judgment may shed further light on this, once deposited with Parliament.

weekly.[187] This is perhaps unsurprising given the centrality of the monthly assessment period to the UC system. It is not known, however, whether the *Johnson* case will have any influence on the department's future approach to resolving specific, narrow issues that affect a certain group of claimants or issues which amount to unintended consequences of the operation of the system, rather than deliberate policy choices. It may be that whilst the system continues to be scaled up as part of the Move to UC and there continue to be competing development needs as part of this exercise, the space for making any additional improvements, of the kind which followed the *Johnson* judgment, may remain limited and it may be that only identification of specific unlawfulness by the courts will force further changes.

The *Johnson* case provides one example of a judicial review challenge being brought against an aspect of a highly automated decision-making system within the context of social security. The case illustrates that there is potential for new dynamics to operate in the relationship between judicial review and bureaucracy, when challenges are brought in the context of increasingly 'system-level' or 'algorithmic' bureaucracies. The response from the DWP throughout the various stages of the litigation suggests that the extent to which judicial reviews are perceived as threatening core, architectural features of automated systems may have a role to play in the impact of judicial review, in terms of the initial response to the threat of litigation, incentives to appeal judgments and in the implementation of judgments. It is plausible to imagine that, had the Court of Appeal taken the same view as the High Court on the meaning of the legislation, then the department's response would have been markedly different, given that the department appears to have viewed the High Court's decision as having potentially much broader implications for the universal credit system as a whole. The case also suggests that, although factors such as engrained cultures at a 'street-level' or the challenges of improving the quality decision-making through training of staff might have a lesser role to play as compared to in non-automated environments, if front-line staff continue to feature in overall decision-making processes, they may still remain relevant. What is not clear from this case, taken in isolation, is whether the changed nature of administrative environments will result in any change in the impact of judicial review more generally, in terms of how the public law principles expounded by the courts shape administration. Nonetheless, there are signs from *Johnson* that the dynamics of how judicial review impacts on bureaucracies is shifting, and will continue to shift, as a result of the move in administration towards algorithmic bureaucracy.

[187] Answer by David Rutley MP (Parliamentary Under-Secretary (Department for Work and Pensions) of 16 November 2021 to written question UIN 71287, tabled by Andrew Gwynne MP on 8 November 2021. For four-weekly paid claimants, there is one assessment period each calendar year in which they receive two payments of four-weekly earnings, thereby resulting in a reduced UC award for that month. In each of the other UC assessment periods, their award is slightly higher due to them receiving four weeks of wages rather than one month.

# V: Conclusion

This thesis has raised a previously neglected question as to the capacity of judicial review to impact upon automated administration. By building up a picture of the evolution of administration in the UK, from 'Weberian' bureaucracy, through NPM, and e-Government or Digital-Era Government, and towards 'system-level' or 'algorithmic' bureaucracy, it is argued that a seismic change in UK public sector administration has taken place and will continue to develop. This thesis argues that this change in the nature of administration is an important one and, as a consequence, requires us to revisit conclusions previously drawn about the role of judicial review in more traditional administrative environments.

We have seen that many of the existing 'impact studies' on judicial review, and its influence on the complex bureaucratic workings of administrative institutions, have focused on specific administrative contexts and institutions, including the role of front-line or 'street-level' bureaucrats in particular settings. With that in mind, this thesis has situated the discussion of the capacity of judicial review to influence algorithmic bureaucracy within a particular policy context and institutions, namely social security and the central government departments which administer it, with the Department for Work and Pensions front and centre. As a result of examining algorithmic bureaucracy in the social security context, we can see the extent to which automation and automated decision-making can affect how, and where, discretion sits within the overall socio-technical systems and also how technology itself has the capacity to influence policy decisions.[188] This general observation is supported by the example of the *Johnson* case, in which the legislative framework was designed to reflect the highly automated universal credit system, with minimal discretion available to 'street-level' decision-makers. This meant that individual decision-makers were unable to adjust the universal credit calculations for the claimants facing 'double wage' or 'no wage' assessment periods, to reflect that the claimants were in receipt of regular and stable incomes from their employment, which might otherwise have led them to expect to receive regular and stable levels of benefit.

The analysis of automated decision-making in the social security context also highlights that flexibility, or lack thereof, is not uniform across algorithmic bureaucracy in light of varying technical capabilities or constraints. The changes made to universal credit during the coronavirus pandemic, including the £20 uplift to universal credit and adjustments to the work allowance and taper rate, discussed in section III, portrayed a capacity for flexibility that could be deployed at speeds which would not have been possible under 'legacy' IT systems. On the other hand, the rigidity of the system in other areas is also evident. The *Johnson* case, in which the challenge was characterised as being to a core, architectural feature of the universal credit system (the monthly assessment period), illustrates that this may be a new dynamic - or perhaps a new version of an existing factor - that may be relevant to future empirical study of the ways in which judicial review influences administration.

[188] Rita Griffiths, 'Universal Credit and Automated Decision Making: A Case of the Digital Tail Wagging the Policy Dog?' [2021] Social Policy & Society 1.

The implementation of the *Johnson* Court of Appeal judgment by the DWP was via a solution that combines the automated identification of *Johnson*-type cases with a manual adjustment to the automated calculation of universal credit for the assessment periods in question. This hybrid approach highlights that previously identified barriers to the influence of judicial review in human decision-making environments such as engrained cultures or staff training may continue to be relevant in so far as front-line administrators continue to play a role in the overall socio-technical systems in use.

Overall, this thesis shows there are factors and dynamics relevant to the study of the impact of judicial that are evolving and shifting, as the underlying administrative environment develops towards algorithmic bureaucracy. Researchers conducting future empirical studies of the impact of judicial review in specific algorithmic bureaucratic settings will need to take account of these changing factors. For example, if the previously identified distinction between 'own fact' judicial reviews and 'policy' cases becomes narrower in algorithmic bureaucracies, as the *Johnson* case suggests, this could have implications for the impact of judicial review on bureaucracy more generally. Whilst it has not been possible to draw more extensive conclusions about *how* judicial review might structure algorithmic administration based on the single example we have explored, the identified need to revisit the conclusions and methods used in previous 'impact studies', and to update them in light of the expanse of automated decision-making, appears to be worthy of consideration.

*Word count:*
*21,034 (without footnotes)*
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