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Three Roads to Rome? Comparative Policy Analysis of Predictive Tools in Child Protection Services in Aotearoa New Zealand, England, & Denmark

Jørgensen, Andreas Møller; Webb, Calum; Keddell, Emily; Ballantyne, Neil

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Abstract

Across nation states, social work services have developed and implemented predictive assessment tools that utilise algorithms to calculate risk from large inter-linked databases. In this paper, we explore and compare the policy contexts for predictive tools in family and child protection services in England, Denmark and Aotearoa New Zealand. The development of predictive tools is part of a dynamic process of datafication triggering a range of political and professional conflicts involving political ideologies, policy orientations, ethical considerations, implementation techniques and tools for problem solving. Focusing especially on political and policy environments, we explore how predictive tools are discursively constructed and are promoted or challenged by key stakeholders. Claims-making regarding efficiency, accuracy, ethics, the role of the state and the causes of social problems play out differently in different policy contexts. Each case study provides insight into the processes assembling the use of predictive tools in child protection services. In Aotearoa New Zealand, key figures are embedded in central government and the public debates are closely tied to political actors and political ideologies. In comparison, in England and Denmark debates and actions are diffuse across levels of government and private and public sectors. In each case, some constant drivers closely linked to conceptions of the ideal state are identifiable.

Authors

* Andreas Møller Jørgensen, Assistant Professor of Social Work, Department of Sociology and Social Work, Aalborg University, Denmark, anmj@socsci.aau.dk

Calum Webb, Research Associate, Department of Sociological Studies, University of Sheffield, England, c.j.webb@sheffield.ac.uk

Emily Keddell, Assoc. Professor, Social and Community Work, University of Otago, Aotearoa New Zealand, emily.keddell@otago.ac.nz

Neil Ballantyne, Senior Lecturer, Open Polytechnic of New Zealand, Aotearoa New Zealand, neil.ballantyne@openpolytechnic.ac.nz

*) corresponding author

Introduction

In the last decade, different jurisdictions have developed and applied predictive tools that make use of big data and Artificial Intelligence (AI) to reduce costs and improve the targeting of welfare services. Predictive tools are software systems that employ algorithms and statistical models, which have been trained on data from multiple sources, to calculate and produce an output concerning the likelihood of a particular outcome for service users (Gillingham, 2019). Predictive tools are not new to social work with children. In the 1980s, early expert systems, which used AI to identify professionals' knowledge base and rationalise decision-making, were developed in child welfare services (Kirk & Reid, 2002). Predictive tools have been developed, tested and in some cases implemented in child protection services in several countries including the USA, the UK, Aotearoa New Zealand, Australia, the Netherlands, Norway and Denmark. Research has focussed on legal and ethical issues (Leslie, et al., 2020), public transparency (Dencik, et al. 2019), interpretability (Pasquale, 2015), effectiveness (Clayton, et al., 2020), and the risk of reproducing inequalities (Keddell, 2015; Eubanks, 2018). Managerialism and risk management are generally considered to be decisive forces influencing the implementation of electronic information systems in social work (Devlieghere, 2017). Managerialism refers to the belief that better management will solve social problems (Tsui & Cheung, 2004) while risk management indicates that the future can be predicted and controlled (Parton, 2008). There is an important throughline in the adoption of child protection predictive analytics related to political and professional conflicts and epistemological paradigms, ideologies, policy orientations, ethics, and approaches to problem solving. Each of these play a role in the assemblage (Kitchin, 2014) of new social work technologies and shape what is meant by key considerations like efficiency, accuracy, and ethics. One way of describing differences in policy contexts is through the concept of policy orientations, typified as child welfare/family services, child protection or child focussed (Gilbert, et al., 2011). Literature addresses how algorithms find a foothold in children's services and are shaped by the immediate socio-political landscape (Keddell, 2015; Redden, et al. 2020); international comparative case studies hold the potential to further elucidate the processes involved. In this paper, we explore and compare the contexts for predictive tools in child protection services in England, Denmark and Aotearoa New Zealand. Focusing especially on changing political and policy environments, we consider how predictive tools are constructed in political discourse, gain or lose legitimacy, and are promoted to, and challenged by, key stakeholders. We find that similar technological developments are socio-politically conditioned, constructed, implemented or discontinued in diverse ways.

Research design and method

We adopt a comparative case study approach that seeks to understand the trajectory of predictive algorithms by tracing construction and meaning-making processes within and across states. The constellation of social, political, historical, and legal factors that influence a predictive system is known as a data assemblage (Kitchin, 2014; Redden, et al. 2020). Dencik, et al. (2019) note that "data, and the way it is generated, collected, analysed and used, is a product of an amalgamation of different actors, interests and social forces" (p. 873). Our case studies focus on the 'systems of thought' and 'political economy' drivers, and the role that the media, political ideology, and key actors have played.

This paper presents and compares the origins of predictive tools in child protection services in three case-study countries: England, Denmark, and Aotearoa New Zealand. In doing so, we identify how predictive analytics is shaped by and shapes the socio-political discourse of different and similar policy orientations within different histories and institutional structures. Employing Gilbert et al.'s (2011) typology of policy orientations, we can categorise the orientations of different nation states. The orientations are categorised

as child welfare/family service, child protection, and child focussed, though the increasing mixing of the orientations is acknowledged, as countries change direction over time, creating overlapping and diverse policy directions. Each contains different assumptions about the causes of child abuse and the proper focus of the child welfare system (Parton, 2010). A child welfare orientation focusses on preventive services provided early to support families experiencing problems, and has less focus on forensic approaches, more voluntary care, and more diffuse organisational structures. Causes are conceived as relating to family resources. Child protection orientations generally have a risk focussed system that employs a centralised institution that relies on reports from professionals and citizens, only intervening when concerns are serious. Causes of child abuse are constructed as problem parents who are risky and deviant. Most care is involuntary and undertaken through the court system. In a child focussed orientation, the focus is on meeting children's developmental needs, often employing a social investment framework to evaluate the impacts of investment. Services focus on the child, rather than the family or community, and causes are assumed to be a lack of attention paid to children and their direct needs. Using this typology, Aotearoa New Zealand (at the time period of interest) was a combination protectionist and child focussed orientation; England was increasingly considered to be an overwhelmingly protectionist system (Featherstone, et al., 2018); and Denmark was shifting from a child welfare/family service orientation towards a child focussed protectionist orientation.

In Aotearoa New Zealand, child protection services are centralised. In Denmark and England, child protection services are devolved to varied extents across the constituent local authorities. Importantly, the socio-political discourses evolved differently in relation to different levels of development and implementation of predictive tools. Aotearoa New Zealand was early to develop predictive tools in child protection but never reached implementation due to political, ethical and practical concerns. Due partly to the centralisation of child protection services, key figures are embedded in central government and public debate on the value of predictive algorithms is closely tied to political actors and the policy orientation. In England and Denmark, debates and actions are diffuse across levels of government, policy, and private and public sectors. England seems to have greater experience with predictive tools than Denmark. Despite evidence of the inappropriateness of predictive tools in England (Clayton, et al., 2020), development and implementation continue relatively undeterred. In Denmark, where predictive tools in child protection are still in their infancy, development continues although implementation of publicly debated cases has been put on pause because of legal concerns about using inter-linked data.

Data for the study was procured through desk-based research compiling existing research outputs and data; news reports; and digital and social policies and strategies. Each case was analysed separately focussing on 'systems of thought' and 'political economy' drivers, and the role of the media, political ideology, and key actors. Next, we compared analytical themes emerging from the respective single country cases and revisited the respective cases with emerging similarities and country specific themes in mind. The process was iterated until a point of saturation was reached. The comparative approach demonstrates how similar socio-technical solutions circulate and translate between dissimilar welfare states, and in different wider socio-political contexts (Bartlett & Vavrus, 2017). Strikingly similar visions, values, and ideology bind reforms together across putatively dissimilar countries, as global flows of policy ideas and policy actors influence state policies (Carney, 2009).

Analysis- Local translations of transnational trends

Aotearoa New Zealand

The development of predictive risk modelling in Aotearoa New Zealand was associated with a series of policy reforms instituted by the Fifth National Government of New Zealand, which held office for three parliamentary terms from November 2008 until their defeat by Jacinda Ardern's Labour-led coalition in October 2017. The National Party has often been described as a conservative or liberal-conservative party with core values including "…individual freedom, the centrality of property rights and private enterprise in the economy, discomfort with social and moral reform, (and) the importance of the family as the fundamental social unit…" (James, 2015, p. 221).

The National Government was committed to a social investment approach to social policy characterised by a strong preference for selectivism and an emphasis on targeted investments now to reduce the 'future financial liability' of the state (Baker & Cooper, 2018). This approach was intimately linked to the use of data to target population 'segments' (Ibid.). It was enabled by a sophisticated technological capability in the form of the Integrated Data Infrastructure: a centralised research database holding de-identified, longitudinal microdata on the population drawn from linked government databases and surveys (Social Investment Agency, 2017).

The focus on a social investment approach to child welfare, combined with the older child protectionist orientation, shaped around a notify-investigate structure with limited investment in community-based family services, shows the mixing of a child protection and child focused orientation (Keddell, 2015; 2019; Gilbert, et al., 2011). Despite earlier efforts to adopt a legislative framework utilising Māori concepts and supporting families earlier, this had been supplanted by managerialism, lack of preventive investment and lack of meaningful transfer of power and resources to Maori. The overarching policy rationality of social investment and the technological affordances of the integrated data infrastructure opened the way for the rise of data science as an emerging form of policy expertise to tackle the 'wicked problem' of child maltreatment. In 2011, Paula Bennett, the then Minister for Social Development, announced a Green Paper for Vulnerable Children (New Zealand Government, 2011). The Green Paper invited the public to respond to a series of questions about reforms to the child protection system including questions about 'information sharing' and the 'monitoring' of vulnerable children. In a public information video for the Green Paper Bennett asked the viewing public, "…what would you give up so that vulnerable children come first? Are you willing for all children to be tracked at birth, for example?" (New Zealand Government, 2011). Yet, the Green Paper included no direct references to predictive risk modelling.

A subsequent White Paper for Vulnerable Children (New Zealand Government, 2012) included a series of wide-ranging reforms to the child protection system. It had substantially filtered out concerns about social causes of harm to children, primarily poverty, and instead restricted its focus to individuals, promoting a 'get tough' approach to child abuse, and recommending extensive reporting of abuse, identification of abusers, and information sharing as solutions (New Zealand Government, 2012). This individualistic and punitive approach to child abuse resonated with the selective, targeted stance of the broader social investment policy approach. The White Paper also disclosed that the Ministry of Social Development (MSD) had commissioned a 'prototype study' by researchers at the University of Auckland to test the viability of a predictive risk modelling tool based on administrative data. This study developed a Predictive Risk Model (PRM) using a deidentified, retrospective dataset linking records from two administrative databases: the welfare benefits system and the child protection services system (Vaithianathan, 2012; Vaithianathan, et al., 2013).

A follow-up feasibility study was undertaken in 2013 by MSD researchers and university academics (New Zealand Government, 2014a; Wilson, et al., 2015). This study recognised considerable problems with data linkage and the use of system contact as a proxy for abuse occurrence, responding to increasing concerns from academics and others (Fluke & Wulzcyn, 2013; New Zealand Government 2014a; Pierse, 2014; Shlonsky, n.d.; Keddell, 2015, 2019). An ethical review was also competed, but despite the many serious ethical issues identified, especially around data privacy, inaccuracies due to proxies, stigma, the reproduction of ethnic biases, and the high rate of false positives, the project was still promoted as feasible and its ethical issues considered able to be 'mitigated' (Dare, 2013).

In a third and final phase, the MSD proposed to conduct a prospective, observational study that would calculate a risk score then compare it to outcomes for all newborn children (New Zealand Government, 2014b). In September 2014, Minister Anne Tolley replaced Paula Bennett as Minister for Social Development. Within a few weeks of taking office, the MSD's plans for the prospective, observational study were halted (New Zealand Government, 2014b). No public announcement was made about this intervention until July 2015, and only following renewed media interest.

The first indication that policy direction had changed emerged in a series of radio and print media articles that began when Rhema Vaithianathan (the researcher who led the PRM prototype study) appeared in a Radio New Zealand programme raising concerns that the MSD had chosen not to implement the predictive risk tool proactively across the whole population "…as it is meant to be used" (Ryan, 2015). Several weeks later, Minister Tolley confirmed this in a dramatic announcement – in an article titled "Children 'not lab rats' - Anne Tolley intervenes in child abuse experiment" – that she had halted the prospective, observational study stating, "…officials had sought ethical approval for one study which involved risk-rating a group of newborns and not intervening in high-risk cases, to check whether their predictions came true" and that "…she could not fathom what her officials were thinking" (Kirk, 2015). The news media article made no reference to the fact that this news was eight months old. She also referenced her distaste at the intrusive nature of possible intervention, "Because God knows, do we really want people with clipboards knocking on people's doors and saying 'hello, I'm from the Government, I'm here to help because your children are going to end up in prison?'" (Ibid.).

The media debate demonstrated that whilst members of the research team responsible for developing the PRM tool remained focussed on using it to surveil the whole population of newborn children, the contradictions inherent in this position for a political party that was essentially liberal-conservative in outlook became politically untenable as the implications for informed consent, privacy and service provision emerged. The new Minister objected to the experimental nature of the study, despite the fact the study was comparing risk scores with actual outcomes, rather than one group missing out on valuable interventions. Secondly, she objected to the potentially intrusive and interventionist nature of the PRM going live on the whole population, including the voting middle class. Moreover, the Minister was mindful that the use of PRM in this manner might overwhelm the capacity of public services to respond, requiring greater investment in service provision than was currently available (Pierse, 2014). For these overt reasons, the project lost favour with the new Minister. In addition, it is likely that the PRM tool – with its high rate of false positives – applied to the whole population would have identified many families who were not known to the child protection service, highlighting threats to the privacy rights of the middle class voter base of the National Party and adding to the politically unpalatable nature of the project (Ballantyne, 2019).

England

The delivery of children's services in England is largely devolved across its 152 constituent local authorities, and they have experienced variable rates of adoption of automated decision-making and predictive analytics (Dencik, et al. 2018). What data applications count as automated decision-making, predictive analytics, risk-profiling, machine learning, or AI tends to include a wide range of use-case scenarios (Redden, et al. 2020). Freedom of Information requests receive inconsistent responses (Dencik, et al. 2018), as local authorities interpret their requirements under the Freedom of Information Act 2000 differently, leading to criticism of transparency regarding if and how AI is being used (the Committee on Standards in Public Life, 2020). While English local authority uses of automated decision-making and predictive analytics remain opaque, there have been a few high-profile cases where predictive systems to identify children at risk of abuse or neglect have been used or trialled (Dencik, et al. 2018; McIntyre & Pegg, 2018; Redden, et al., 2020).

Dencik et al. (2018, 2019) identified 53 local authorities in England that were currently using predictive tools. Each system had its own characteristics, with uses ranging from probabilistic data linkage between the databases of different services to the production of predictive analytics creating risk scores for children based on publicly held data. Around the same time, a news media article reporting one such use of data (McIntyre & Pegg, 2018) was highly critical of the partnership two local authorities had with a private data analytics company developing, machine learning models to predict children at risk of abuse or neglect.

Subsequently, one of the local authorities – Hackney Council – discontinued its use of the predictive analytics tool commissioned from Xantura as it did not "realise the expected benefits" (Turner, 2019). A recent study by the What Works Centre for Children's Social Care, trialling predictive machine learning algorithms in three local authorities, found no evidence that the models worked well for predicting risk (Clayton, et al., 2020). Despite this high-profile departure and evidence of the unreadiness or inappropriateness of the underlying methods and data, the development of predictive tools in child welfare services in England seems to continue relatively unimpeded.

Consistent across the leading studies, and news media reports, on predictive analytics in child welfare are two drivers of the adoption of this technology in England: austerity, and the Troubled Families Programme (TFP) (Dencik, et al., 2018, 2019; Leslie, et al., 2020; McIntyre & Pegg, 2018; Redden, et al., 2020; Turner, 2019, 2020). Both of these policies were incentivised by the aims of the Innovation Programme (IP), a U.K. government scheme to distribute additional funding to support, evaluate, or coerce changes to local services (Jones, 2015; Purcell, 2020), to "test new approaches to tackling the most important and difficult practice questions facing the children's social care system" (Department for Education, 2016).

Since 2010, local governments in England have had central grant provision for the delivery of local services cut by 60 per cent on average (Davies, et al., 2019). In children's services, cuts have been greatest in the most deprived local authorities and to services that deliver early help to children and families (Webb & Bywaters, 2018). This created a drive to explore the capacity of machine learning to create greater efficiency – to automate 'backroom' tasks in order to free up the associated labour, to speed up existing systems by leveraging patterns in existing data, or as a route to allocating far more restrained resources more efficiently.

The TFP is a UK government initiative to incentivise local authorities to turn around what the government estimated were 120,000 troubled families, in its initial phase, and an additional 400,000 in its follow-up (Crossley, 2018). The programme operated on a payment-by-results structure, where local authorities were required to demonstrate that they had correctly identified that the family they intervened on as troubled and, secondly, demonstrate that their lives had been turned around in relation to three main criteria: school attendance, youth crime/anti-social behaviour, and unemployment. The programme embodies the most

recent conception of a long-running continuum of policies that position social problems within a mythos of "undeserving", "underclass", or "residual" individuals or families who are characterised as feckless and dangerous (Lambert & Crossley, 2017). It also reflects an increased leveraging of the power of data on individuals – extricated from structural contexts – to surveil and coerce marginalised groups (Horsley, et al., 2020).

Within a protectionist orientation under austerity, many families became increasingly framed as risks not only to their children but to national fiscal stability and the perceived sustainability of public services for the wider deserving public. The TFP created an ideal foothold for the use of machine learning in children's social work services to model and predict risk and, by doing so, reduce the financial burden these families supposedly placed on the state, ostensibly by being able to intervene earlier. However, the concept of a 'troubled family' has essentially no empirical basis; evaluations of the programme ranged from "99 per cent success rates" to "no significant impact" (Crossley, 2018; Gregg, 2017). Local authorities were therefore given creative license to "invent" their troubled families in order to (re)claim the desperately needed funds offered by the payment-by-results scheme. The implication that these families were risky or burdensome also granted a moral license for intervention and data usage. The requirement to demonstrate diverse outcomes historically held by different services further manufactured a need for wholesale data linkage.

This task was perfectly suited to the veneer of objectivity that machine learning promised to provide, and would guarantee eligibility for the first criteria of payment-by-results. A risk-scoring algorithm could provide rankings that could manufacture the reality imagined by the TFP. In this way, the TFP acted as a "key breakpoint" (Mahoney, 2000) to the next paradigm in a path moving towards greater automated welfare systems. Data warehousing and data-based constraints on social work practice had emerged during the New Labour government (Horsley, et al., 2020; Langston, *forthcoming*; White, et al., 2010), and the acceleration of the use of machine learning through the TFP shifted children's services securely into the emerging "Fourth Industrial Revolution".

The IP provides investment for new approaches to children's social services and has typically favoured projects that open up the market to private and public sector collaboration (Jones, 2015; Purcell, 2020; Tunstill, 2018), serving to perpetuate the long-running myth of public sector inefficiency and stagnation (Mazzucato, 2018). Applications of machine learning to children's services represented a perfect fit to the IP as they require a high degree of technical sophistication with techniques more common in private sector entrepreneurial organisations, providing a convenient rationale for private sector partnerships in children's social care. Breaking into this 'market' has been a defined goal for many transnational corporations (Jones, 2018).

These three policy dimensions worked in harmony to create the conditions for the ascent of predictive analytics in children's services in England. The fiscal pressures imposed by austerity created the environment where any additional resource became essential to the continuation of services at a time of rising need and demand (Bywaters, et al., 2018). The TFP, justified in part by austerity and the need to reduce the supposed £9billion annual cost of 120,000 families, manufactured a problem amenable to a protectionist orientation that local authorities could not ignore, with machine learning as a readily apparent solution.

Denmark

In the Danish public sector predictive tools are in their infancy but on the rise. The development, direction, and fate of predictive algorithms in Danish child protection services are contingent upon two intersecting political discourses concerning digitalisation and social welfare.

The first Danish national digitalisation strategy (Ministry for Research, 1994), which aimed at enhancing democratic participation, increasing transparency and empowering the citizenry, was guided by values of democracy, social inclusion, free information, and a more efficient public sector and by an emphasis on citizens' IT-rights including privacy, universal design and access (Jæger & Löfgren, 2010). With the exception of citizens' IT-rights, these values had disappeared in the subsequent strategy. Instead, improved efficiency became the sole goal along with an argument for the centralisation of digital governance (Ministry for Research, 1999). A digital task force was established under the Ministry of Finance as a central governing body representing national, regional and local interests. The task force's strategy (The Digital Task Force, 2002) echoed the new Liberal Government's digitalisation policy, arguing that the aim of digitalisation was to improve welfare services by enhancing the efficiency of the public sector. Digitalisation was understood as a neutral and necessary tool to lessen the burden of administrative tasks and to "turn cold hands into warm hands", freeing resources to enable more frontline workers to engage with people in need (Jæger, 2003). In 2011, the digital governance structure started devolving into a patchwork of interrelated and interdependent actors and strategies. The Agency for Digitisation replaced the digital task force and regional and local governments became significant political and strategic actors in their own right.

During the 2010s, the welfare work that had hitherto been left to frontline workers increasingly became subject of digitalisation (Jæger, 2020). Digitalisation was reframed as a tool not solely freeing resources but also delivering and improving welfare services directly. Digitalisation strategies across the digital governance patchwork today argue that AI, big data and predictive algorithms will improve public services, and support faster, more efficient and better qualified decision-making and case processing (The Danish Government, 2019; The Danish Government, KL & The Danish Regions, 2019). To support these ambitions, the government established an investment fund to support the development and dissemination of new technologies (Antczak & Birkholm, 2019).

In child protection services, the ambition is translated most prominently into efforts at providing: better informed and standardised systems for risk assessment; minimising errors in case management; and earlier prediction of children at risk of maltreatment. This parallels two developments in Danish social policy: the first concerns a shift from a holistic family orientation towards a child-centred and risk-oriented approach; the second concerns the political cultivation of evidence-based social work practice.

The 1998 Consolidation Act on Social Services aimed at creating equal opportunities for the development of children with special needs, developing early interventions and preemptive measures while ensuring good relationships between children and their parents (Ebsen, 2007). Motivated by increasing expenditure on child welfare and child protection interventions, the absence of evidence about the effects, media coverage of professional neglect in child protection cases, and ensuing critique of the child protection system, the Consolidation Act on Social Services saw paradigmatic changes in the 2000s and the 2010s. Interdisciplinary committees were set up to ensure interventions were based on expert knowledge. The notion of the best interests of the child became the prevalent dictum in social welfare policy, introducing a child focused approach to social work, similar to England and the USA (Gilbert, et al., 2011). In the 2018 parliamentary election, Mette Frederiksen ran for office for the Social Democrats calling herself "the children's prime

minister" (Frederiksen, 2018). The Social Democrats won the election and is now developing a Children's Act based on the principle that the child is put first. Local authorities must intervene proactively without regard for parents' wishes if they contradict the "best interest of the child" (The Danish Government, 2020). Already in 2003 and 2004 the Danish Government published action plans that included various initiatives to ensure early discovery of child abuse (Gilbert, et al., 2011); the plans were reinvigorated in 2013 with the Child Abuse Package, which stressed the mandatory duty of welfare professionals to report on suspicion of child maltreatment requiring local authorities to act within 24 hours of referrals.

Inspired by predictive algorithms in the USA and Aotearoa New Zealand, local Danish governments are developing predictive algorithms to screen incoming referrals of child maltreatment. The cross-national influence is evident in Rhema Vaithianathan's inclusion one of the scientific advisory boards. The aim is to predict risk of harm; likelihood of criminal behaviour; additional referrals; medical diagnoses; and illegal school absenteeism. The risk scores are intended to inform social work decision-making how to respond to referrals (Jørgensen, 2020; Lund, 2019), thus reflecting a specific interpretation of social work as child-centred and risk-oriented.

Despite warnings (Amoore, 2019; Gillingham & Graham, 2017; Keddell, 2019), predictive tools are expected to provide more objective insights based on patterns in large data sets that are unobservable to, or are interpreted with bias by, humans. Technocratic solutions are reconciled with the optimism of the evidence-based movement regarding the possibility of approaching messy social problems and their solutions with the certainty of natural/physical/mathematical sciences (Høgsbro, 2011; Jørgensen, 2020).

Public trust in responsible data processing is essential but is framed primarily as an obstacle to the development of AI (Jæger, 2020). The local government of Gladsaxe, for example, has been developing a predictive algorithm to identify children in risk of becoming socially vulnerable by compiling and comparing data concerning, among other things, health history, abuse data, residence and ethnicity (Frederiksen, 2019). The project spurred public debate about citizens' legal rights, trust in the public sector, transparency, reliability, ethics and surveillance. For example, Lisbeth Zornig, former chair of the Government's Children Council and founder of the 'Social Innovations Forum' think-tank and 'Children's IT Foundation', argued in reference to the Nottinghamshire Model and the TFP in England that local authorities should use whatever means necessary to detect children at risk of maltreatment (Lessel & Houlind, 2018; Mortensen, 2018). Others argued that AI is not capable of making social judgements (Lyngse, 2019). Surveilling and targeting vulnerable families was questioned on moral and legal grounds, and on the potential consequences for the trust between service users and social workers (Antczak & Birkholm, 2019; Motzfeldt, 2019). Politicians at national and local levels were conspicuously absent from these debates despite being called upon repeatedly (KL - Local Government Denmark, 2018; Mortensen, 2019).

Gladsaxe's project was paused due to legal issues regarding data linking and usage, pending legislative amendments (Andersen, 2019). Despite ethical concerns, legal issues and concerns about the reliability and usability, AI in child protection remains a tenacious idea. According to a survey conducted by KMD (2018), more than half of local governments believe that it is likely or very likely that predictive algorithms will be common practice in child protection services within the next five years.

Discussion and Conclusions

Trajectories in the use and justification of predictive technologies in the three countries are different, which can be explained, at least partly, by differences in their child welfare policy orientations. In Aotearoa New Zealand, a child protection/child focussed policy orientation was consistent with the neoliberal policy direction of the National party, and aligned well with the targeted, individualised focus and future harm-reduction claims of predictive tools. Yet plans for a population-wide roll-out fell out of favour due to the fear of electoral repercussions once the reach of the proposed tool became clear. In England, a protectionist orientation along with associated policies assisted in the legitimisation, development, and implementation of risk-scoring tools and, along with decentralisation may, to some extent, explain their relative endurance despite high-profile abandonments and evidence of ineffectiveness. In Denmark, a child focussed protectionist orientation intersects with digitalisation strategies emphasising an alluring imaginary of faster, more efficient and better qualified decision-making. Local and national authorities are awaiting the necessary legislative amendments to continue the implementation of AI in child protection.

Yet despite these differences, common and significant themes are detectable, including the global reach of some key influencers. In each case, the family unit and specific individuals within the family, rather than the environment the family lives within becomes the central concern of the state, and the subject of algorithmic risk prediction. This focus serves to reproduce certain dominant narratives of risk; that risk is inherent in individuals and families, not a linked consequence of structural inequalities, and is better able to be identified through statistical calculation than human decision-making (, 2019). This narrow understanding of child welfare is not justified through theories of child abuse, but through a socio-political consensus on how child welfare should be approached, sometimes with a specific economic justification driven by tropes of public sector inefficiency. This is reflected in the social investment policies of the National Party, by the punitive narratives surrounding costly Troubled Families against a backdrop of austerity, and by the preference for evidence from the objective sciences.

There is clear mission creep from policies outside of social work, which have shaped the uptake of predictive analytics. This emerges from policies based on retrenchment *or* investment – rationing what public services have to spend well *or* making wiser choices when resources are made available – and seemingly from both at the same time, when the distinction becomes blurred. Longstanding policies such as the digitalisation agenda in Denmark can mutate over time becoming, for example, more concerned with the optimisation of state activities than with defining and enshrining public rights. Such singular and myopic foci risk stifling the broader potential of AI for child welfare and citizen-centred social services. To recognise how AI might be shaped differently going forward we need to acknowledge how it is shaped by socio-political processes and political ideology.

This comparative case study has focused on only a few drivers of assemblage. A broader disassembly of English child welfare services data assemblages, for example, can be found in Redden, et al. (2020). Despite these limitations, a comparative analysis of roads to child protection predictive analytics in three countries as diverse as England, Denmark, and Aotearoa New Zealand shows that AI has been exceedingly constrained in form and function. Those with the most intimate knowledge of the child protection system —social workers and people who have lived experience of child welfare intervention — have seemingly been allowed to play little to no part in defining the scope, aims, and governance of the use of data they provide or have involuntarily extracted. This exacerbates concerns about racism, stigma, accountability, and acceptability of algorithmic decision-making (Brown, et al., 2019; Eubanks, 2018).

In a sense, the rise, instability and potential fall of algorithms in children's social work is largely predictable since it amplifies the many contradictory impulses of the neoliberal state. It aims to be both economically efficient *and* intrudes more into private life, and this efficiency may backfire if algorithms identify a large group of families who need more, not less, state support. Predictive models are apt for identifying a potential problem population, but may be sharply rejected if they overstep the social perception of who is permitted to be considered a problem and who is not, capturing in their net those not usually subjected to state intervention. Despite the allure of scientific objectivity, AI can only ever be implemented as an inherently political and value-laden project. Policymakers risk seeing a silver bullet for avoiding the political and relational messiness of state intervention into family life, only to later realise it offers no such solution. It is clear when exploring these politics that it is questionable if governing the poor and excluded is ever a uniform and coherent endeavour, or if, on the contrary, it is a pragmatic one ripe with internal disagreements and logical inconsistencies.

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