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The use of artificial intelligence by government: parliamentary and legal issues

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1. Introduction

Digital technologies¹ such as artificial intelligence (AI) are changing all human activities, at a pace that many commentators argue is increasing². There is currently no internationally recognised technical or legal definition of AI. Commonly misconceived as being a “single thing”³, AI is better understood as a collection of general-purpose⁴, “advanced digital technologies that enable machines to reproduce or surpass abilities that would require intelligence if humans were to perform them”⁵.

This paper focuses on the parliamentary and legal implications of governments using a form of AI: automated-decision making (ADM), which is deployed in automated decision-making systems (ADMS). While the paper reviewed a growing body of literature on the legal implications of ADM, and the broader range of ethical, social and political opportunities and challenges, little appears to have been published on the implications for Parliament’s capacity to exercise its scrutiny and lawmaking functions. Parliamentary responses to the rapid adoption of ADMS by governments around the world are in a similar phase, with existing legal and regulatory frameworks not always being fit for purpose.⁶

ADM promises many benefits, but also holds significant risks.⁷ The same qualities of ADM that may improve efficiency, timeliness and fairness in the public sector could also produce wide-scale negative outcomes for large numbers of people.⁸ Leading scholars have also observed that the tensions between automation and the foundational values of public law are likely to escalate with increased adoption of ADM.⁹

The NSW Government has been using ADM for over 20 years: for example, in November 1999 the Department of Fair Trading launched a business-name registration process that included a “substantial level of ADM”¹⁰. The Commonwealth has used ADM since 1994, and currently automates hundreds of millions of administrative decisions every year.¹¹ Recent developments

demonstrate the increasing salience of this topic. In NSW, [mobile phone detection cameras](#) using AI have enforced illegal use of mobile phones since 1 March 2020, and the Government is due to release its [NSW AI Strategy](#) in the near future. In November 2019, the Commonwealth Government agreed with [orders](#) by the Federal Court of Australia that Centrelink’s online compliance intervention (OCI) system (‘robo-debt’) was unlawful.¹² Globally, debates concerning surveillance technologies such as facial recognition have taken on new significance in light of proposed and existing government responses to the COVID-19 pandemic.¹³

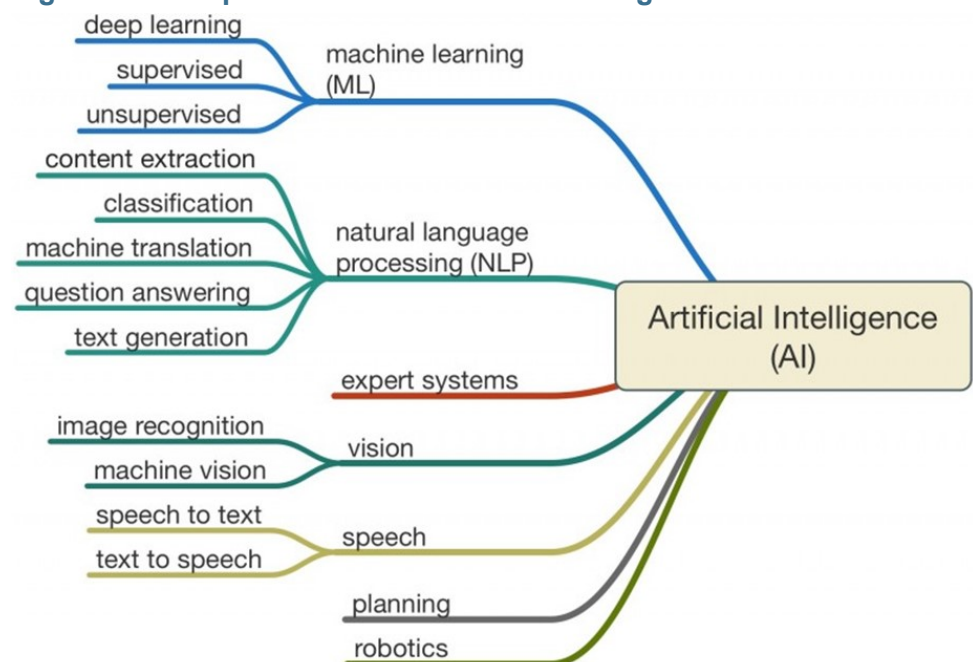
After defining AI and ADM and providing some public sector examples, this paper discusses key parliamentary and legal issues in-depth. The paper finishes with case studies of selected parliamentary developments¹⁴ and recommendations from the literature on how Parliaments could respond.

2. What is artificial intelligence?

2.1 Definitions

There is currently no internationally recognised technical or legal definition of AI, as the term applies to a variety of products and applications, both current and speculative.¹⁵ There is also debate in the literature about whether the technologies captured under the AI heading may indeed be described as “intelligent”¹⁶, and whether other terms should be adopted, such as [autonomous and intelligent systems](#). For the purposes of this paper, AI can be described as “advanced digital technologies that enable machines to reproduce or surpass abilities that would require intelligence if humans were to perform them”¹⁷. This encompasses technologies that enable machines to learn and adapt, to sense and interact, to reason and plan, to optimise procedures and parameters, to operate autonomously, to be creative, to extract knowledge from large amounts of data, and to make predictions.¹⁸

Figure 1: Examples of Narrow Artificial Intelligence¹⁹



According to AI experts, we are currently in the second wave of AI.²⁰ The first wave consisted of expert systems, where a human expert creates precise rules for a computer to follow in the form of an algorithm (see section 2.2 below). The second wave is 'data-driven', where the algorithms are able to autonomously improve their performance by training themselves using data.²¹ First and second wave AI are collectively defined as 'Narrow AI' (ANI; Figure 1), being designed to perform a specific task such as facial recognition or product recommendation.²² Possible future waves may see the development of more sophisticated forms of AI such as artificial general intelligence (AGI), artificial superintelligence (ASI), and the singularity, where AI becomes intelligent and autonomous enough to generate even more intelligent and autonomous AI.²³

2.2 Components

Most AI consists of three parts: data inputs; computations using algorithms; and information outputs (Figure 2). There are also three significant "contextual components" of AI, which are equally important when it comes to understanding how AI works: design, development and deployment.²⁴

Data

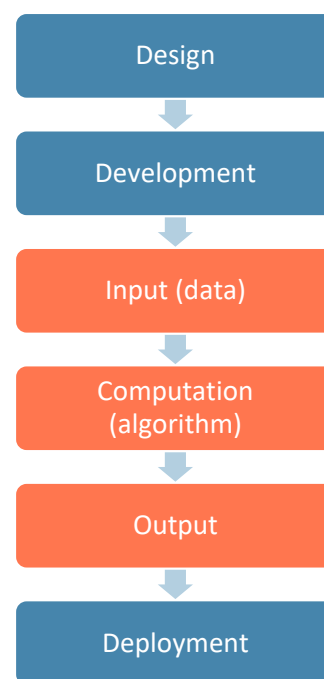
Data is central to the development and operation of AI. It may take many forms, including numbers, words, images and biometric information. Data can be collected from a variety of sources, such as data knowingly provided by individuals (e.g. names), observations of people (e.g. surveillance devices), and data produced as an output of AI (e.g. automated identification of patterns in large datasets).²⁵ 'Big data', which is a key driver of the second wave of AI, refers to datasets that differ from traditional datasets due to what have been called the 'three Vs': volume (amount of data); velocity (speed of data capture and processing); and variety (different data types and sources).²⁶

Algorithm

An algorithm is a set of instructions designed to solve a problem or set of problems. AI systems may use one or more algorithms of different types. For the purposes of this paper, the relevant systems are:

- (1) Expert systems: Any intelligence in this system comes from the encoding of human expertise. These systems are unable to deal with new situations, or new functions, without requiring additional expert coding; and
- (2) Machine learning (ML) algorithms: These algorithms provide a system with the capacity to learn over time. By the process of

Figure 2: Contextual and computational components of AI



identifying patterns in large quantities of data, the ML algorithm is able to generate another algorithm known as a 'model' in order to make better predictions. ML algorithms are generally classified in three types:

- a. Supervised learning relies on labelled data to train a model. The model is then used to predict the correct label for new data;
- b. Unsupervised learning does not require labelled data, automatically identifying patterns and structures from 'training data'; and
- c. Reinforced learning uses feedback on success and failure received from its environment so as to maximise a reward function.²⁷

2.3 Current limitations

Authors such as Professor Toby Walsh observe that there is considerable hype about AI in current public discourse.²⁸ While significant progress has been made in producing machines capable of solving narrow problems, AI is unable to match higher-order human abilities such as abstract reasoning, concept comprehension, flexible understanding or general problem-solving.²⁹ Further, AI can be "surprisingly brittle": "[i]f you change the problem, even slightly, even the smartest AI systems tend to break catastrophically"³⁰.

3. How are governments using artificial intelligence?

AI is a general-purpose technology with a broad range of possible applications across the private and public sectors. Public sector deployment has the potential to deliver economic gains, increase productivity and efficiency, and deliver higher quality public services.³¹ However, AI is equally capable of generating significant individual and collective harms, including increased discrimination, economic loss, and decreased privacy.³²

To date, areas where AI has been used in the public sector include health, criminal justice, aged-care, national security, immigration and urban planning. Adoption of AI by governments is likely to increase given the significant amount of public data they possess.³³

3.1 Automated decision-making

Automated decision-making³⁴ (ADM) is a form of AI increasingly used by governments across multiple policy domains. Deployed in automated decision-making systems (ADMS), ADM involves the use of expert systems, machine learning or a combination of the two. ADM breaks a decision down into a set of 'if then' rules and criteria, so that a decision is understood as an algorithm (a sequence of reasoning) that selects from predetermined alternatives.³⁵

ADMS can be categorised into three groups according to how they are used:

- (1) ADMS that improve general knowledge or technology through the analysis of complex phenomena. Examples include improving climate models and detecting diseases;

- (2) ADMS that improve or develop new digital services in order to optimise one or several criteria such as time, energy or cost by making predictions, recommendations or decisions. Examples include correctional offender management and the automation of decisions to grant certain types of visas; and
- (3) ADMS integrated with cyber physical systems, such as autonomous cars and smart infrastructure.³⁶

Human involvement in an ADMS depends on where the system exists along a spectrum from partial to full automation (Table 1).³⁷ Moving along the spectrum, decision support systems help humans make decisions; human-in-the-loop systems incorporate human involvement at certain points in the decision-making process; and fully-automated systems remove humans from the decision-making process entirely.

Table 1: Examples of automated decision-making systems, from partial to full automation³⁸

	Decision support	Human-in-the-loop	Full automation
Description	Facial recognition tool at airport	Mobile Phone Detection Camera Program	Centrelink's online compliance intervention (OCI) system ('Robo-debt')
Data	Biometric data from applicant Security watchlist database	Data from mobile phone detection cameras	Australian Tax Office (ATO) income data Centrelink records
Algorithm	Facial recognition algorithm	Image recognition algorithm	Expert system algorithm
Decision	Customs official exercises discretion on how to respond e.g. questioning applicant, admitting person to country	ADS automatically excludes non-offending drivers from further action Authorised adjudicator reviews all images before issuing penalty notice	ADS identified discrepancies between ATO data and Centrelink records and automatically generated letter to welfare recipients

3.2 NSW Government examples

The NSW Government has been using ADM since at least November 1999, when the Department of Fair Trading launched a business-name registration process that included a "substantial level of ADM"³⁹. Current examples⁴⁰ of ADM being used by the NSW Government include:

- The [Mobile Phone Detection Camera Program](#) (Table 1);⁴¹
- Mobile Automatic Number Plate Recognition (MANPR);⁴²
- Transport for NSW, Roads and Maritime [identity fraud detection](#);
- [Optimising NSW trains](#);
- The NSW Police Force pre-emptive policing tool, the [Suspect Targeting Management Plan](#) (STMP);
- [Calculating rental subsidies](#); and
- NSW Treasury's [Data Analytics Centre](#).⁴³

In November 2019, the NSW Government released its new digital government strategy – [Beyond Digital](#) (the Strategy). The Strategy's [vision](#) is

to “guide NSW Government to deliver smart, simple and seamless personalised services available from anywhere, to all our customers”. Three components of the Strategy are of particular relevance to this paper:

- (1) To implement a set of [strategic directions](#), the Strategy sets short-, medium- and long-term focus areas for each of the eight [NSW public sector clusters](#). Many of these focus areas involve adoption of ADMS, or AI more broadly. For example, “predictive and automated customer services” are a long-term focus area for Customer Service;⁴⁴
- (2) The Strategy highlights recent [success stories](#), such as an [automated SMS patient result notification service](#) for COVID-19 tests; and
- (3) [New and upcoming initiatives](#), including a [NSW AI Strategy](#) and a [NSW AI Ethics Framework](#).

Also in 2019, the NSW Government commenced a [Rules as Code](#) project where, in partnership with the [DNA Lab](#) and [Code for Australia](#), they are experimenting “with translating prescriptive rules in legislation, regulation, and policy into machine consumable languages (code) so they can be used and applied by computers”^{45, 46}

4. Challenges raised by automated decision-making

4.1 General challenges and guiding principles

A review of relevant literature⁴⁷ identified four key challenges associated with ADMS:

- (1) **Fairness:** Data and algorithms used by an ADMS may contain conscious and unconscious biases;⁴⁸
- (2) **Transparency:** The public may not be aware of when a government is using ADM. There are also issues of transparency around what data is being used and how the ADMS works;⁴⁹
- (3) **Explainability:** Few people possess the knowledge required to understand how an ADMS works. This raises questions such as who needs to know how it works, what parts of an ADMS should be explained, and whether explainability should be built into an ADMS;⁵⁰ and
- (4) **Accountability:** The complexity inherent in designing, developing and implementing an ADMS poses difficulties when it comes to setting appropriate standards against which to judge a decision made by the ADMS, and for determining who may be held accountable.⁵¹

Other challenges of relevance to Parliament include:

- The importance of appropriate regulation of data acquisition, ownership, sharing, storage and use for the purposes of ADM;⁵²
- Ensuring ADMS function in a robust, secure and safe manner, with continual risk assessment and management;⁵³
- ‘Regulatory lag’ as regulators attempt to keep up with the rate at which AI is developing and being adopted;⁵⁴
- The potential negative impact of regulation on innovation;⁵⁵

- Jurisdictional issues posed by the development of AI by large, multinational companies;⁵⁶
- The limited capacity of individuals to know when they are subject to a decision informed or made by an ADMS, to challenge such a decision, or to choose to opt out of a process that uses an ADMS;⁵⁷
- People are more likely to trust decisions made by machines than by other people ('automation bias')⁵⁸, despite the significant amount of human input into all stages of the design, development and deployment of ADMS⁵⁹; and
- The confusion of correlation with causation: ML algorithms can discern statistically significant relationships between data points (correlation), but are unable to determine whether or not a causal relationship exists between different data points i.e. a strong correlation may still just be the result of chance.⁶⁰

In his 2019 [Automated Decision-Making Better Practice Guide](#), the Commonwealth Ombudsman sets out guiding principles to be met when considering whether an ADMS is suitable for adoption:⁶¹

- It “must comply with administrative law principles of legality, fairness, rationality and transparency”;⁶²
- It “must comply with privacy requirements and human rights obligations”; and
- As a matter of good public administration, it “should be efficient, accessible, accurate and consider the needs of any vulnerable and non-digital ready users”.⁶³

4.2 Parliamentary and legal challenges

In a March 2019 [speech](#) on ADM, Justice Melissa Perry observed that the “drive towards automation has changed the way in which hundreds of millions of administrative decisions are made in Australia each year”. While she concluded that the overall message of the adoption of ADM by government is a positive one, in an opinion shared with many other commentators,⁶⁴ Justice Perry noted that serious questions are raised by these developments regarding “how best to ensure the compatibility of automated decision-making processes with the core administrative law values that underpin a democratic society governed by the rule of law”.

In November 2019, Lord Sales, Justice of the UK Supreme Court, made a somewhat starker assessment of public sector use of ADM:

Through lack of understanding and access to relevant information, the power of the public to criticise and control the systems which are put in place to undertake vital activities in both the private and the public sphere is eroded. Democratic control of law and the public sphere is being lost.⁶⁵

The following parliamentary and legal challenges were identified from a review of the relevant literature, including the work of Justice Perry and Lord Sales.

Does the use of automated decision-making by government need to be expressly authorised in legislation?

The exercise of public powers must be authorised under law, including the making of decisions that affect the rights and interests of citizens.⁶⁶ Decisions made by automated systems must therefore also be authorised under law. The question of whether the use of ADM by government needs to be *expressly* authorised in legislation is the subject of ongoing debate.

Looking at existing legislation, at the Commonwealth level it appears that only certain uses of ADM are subject to express legislative provision. A July 2017 ABC article identified [29 provisions](#) in Commonwealth statutes that delegate decision-making powers to an ADMS. Provisions introduced since then include section 62 of the [Road Vehicle Standards Act 2018 \(Cth\)](#), which states:

- (1) The Minister may arrange for the use, under the Minister's control, of computer programs for any purposes for which the Minister may, or must, under this Act:
- a) make a decision; or
 - b) exercise any power or comply with any obligation; or
 - c) do anything else related to making a decision, exercising a power, or complying with an obligation.

As of July 2020, there appear to be no provisions in NSW legislation that expressly authorise ADM in a manner similar to Commonwealth law. There are several provisions which could generally be described as allowing computers to assist a decision-making process.⁶⁷

Justice Perry has observed that delegating a decision to an ADMS, in whole or in part, raises several problems that do not appear to be comprehensively addressed by existing legislative provisions:

- *Who* is the “decision maker”?
- To *whom* has the authority been delegated – the programmer, the policy maker, the human decision-maker, or the computer?
- Is the concept of delegation appropriately used in this context?
- What if the ADMS only determines some of the elements of the administrative decision? Should the determination of those elements be treated as the subject of separate decisions from those elements determined by the human decision-maker?⁶⁸

On the question at hand, Justice Perry has argued:

It cannot be assumed that a statutory authority vested in a senior public servant which extends by implication to a properly authorised officer, will also extend to an automated system nor that authority to delegate to a human decision-maker will permit “delegation” to an automated system. Authority to use such systems should be transparent and express.⁶⁹

Similarly, the Commonwealth Ombudsman has stated:

It is possible for an automated system to make decisions by using pre-programmed decision-making criteria without the use of human judgement at

the point of decision. The authority for making such decisions will only be beyond doubt if specifically enabled by legislation. The construction of such an authorisation should nominate a position or title of a person with ultimate responsibility for the decision, such as the Secretary of the relevant department.⁷⁰

A related question is whether a decision by an automated system is a “decision” for the purposes of administrative law.⁷¹ This issue arose in a 2018 majority decision of the Full Federal Court in [Pintarich v Commissioner of Taxation](#). The Court held that a computer-generated letter sent by the ATO to a taxpayer informing them that a substantial amount of their taxation debt had been excused was not a “decision” under s 8AAG of the [Taxation Administration Act 1953 \(Cth\)](#), so that the Deputy Commissioner of Taxation was free to make a later decision. On the evidence, the majority found that “no decision” was made in the first instance because a “decision” must involve both the “mental process” of reaching the decision and an objective manifestation of that decision.

Zalnieriute et al suggest that the majority decision demonstrates that administrative decision-making is still regarded as an “inherently human process” in Australia.⁷² In a dissenting statement, Justice Kerr [said](#):

What was once inconceivable, that a complex decision might be made without any requirement of human mental processes is, for better or worse, rapidly becoming unexceptional ... The legal conception of what constitutes a decision cannot be static; it must comprehend that technology has altered how decisions are in fact made and that aspects of, or the entirety of, decision making, can occur independently of human mental input.

Should Parliament legislate to control the use of automated-decision making systems by government?

Due to either its flexibility or technology-neutral design, a range of existing legislation may already apply to the use of ADMS by government.⁷³ This includes:

- Administrative law;
- Anti-discrimination law;
- Freedom of information law;
- Privacy law; and
- Sector-specific legislation, for areas such as welfare provision and immigration.⁷⁴

Participants in the debate on when and how parliament should legislate may be divided into three camps: those who consider existing laws to be adequate; those who propose a more cautious and staged approach; and those who think that immediate action is needed.⁷⁵

Scholars who consider that existing laws are adequate hold this position because they have concluded that the characteristics of ML algorithms mean that ADMS can “fit quite comfortably within existing constitutional and administrative law”⁷⁶. A related argument put forward by other scholars is that it is too early to determine whether or not new law is required. They therefore advocate a policy-first approach to ADMS.⁷⁷

According to some organisations and scholars, gaps in existing legislative frameworks already exist. For example, research released by the Office of the Victorian Information Commissioner in August 2019 found that there is no current explicit algorithmic accountability legislative regime in effect in any Australian jurisdiction.⁷⁸ More recently, in December 2019 the Human Rights Commission found potential gaps around:

- (1) Accountability for “AI-informed decision making”, including ensuring that these decisions are lawful, transparent, explainable and subject to appropriate oversight;⁷⁹
- (2) The protection of human rights, such as equality and non-discrimination;⁸⁰ and
- (3) The protection of privacy, due to the absence of a statutory cause of action for serious invasion of privacy.⁸¹

Scholars who argue for a more proactive legislative agenda cite reasons such as the potential for significant unintended consequences,⁸² the possible adoption by government of ADMS for discretionary decision-making, and the novel characteristics of AI. Further to the second point, decisions by governments on when to adopt ADMS are shaped in part by the tension between the efficiencies that automated systems offer and the value of achieving substantive justice for the people whose rights and interests are affected by the state.⁸³ From a survey of the literature, it appears that no Australian governments are currently using ADMS for deliberative or discretionary decision-making.⁸⁴ On this topic, the Commonwealth Ombudsman notes:

Automation of decisions is an evolving area, and there is not yet clear and definitive guidance from the courts about whether it is necessary for all discretions to be exercised personally by a decision-maker.⁸⁵

Possible developments in international jurisdictions suggest that this may occur in Australia in the near future.⁸⁶

On the third reason advanced in support of a more proactive legislative agenda, practical and theoretical arguments have been put forward to suggest that the challenge posed by ML to the rule of law is so substantive that, in effect, there is no relevant existing legislation.⁸⁷ In 2019, a paper commissioned by the European Parliamentary Research Service concluded that AI had been developing to date in Europe in a “regulatory and ethical vacuum”⁸⁸. It cited the fact that few legal initiatives had been introduced that viewed AI in a holistic manner or at a systemic level; nor had any relevant judicial decisions been adopted.⁸⁹

Lawyer John Weaver argues that “we are starting from scratch”⁹⁰ when it comes to regulating AI because there are no laws that address “machines or programs capable of recreating one or more elements of human intelligence”⁹¹. Almost all law assumes that decisions are made by human intelligence. Two features of ADMS that rely on machine learning, and therefore operate using machine logic⁹², have the capacity to pose significant challenges to fundamental legal concepts such as predictability, consistency, legal personality, agency and causation:

- (1) The capacity for independent development; and
- (2) The ability to make autonomous moral decisions.⁹³

Novel features of artificial intelligence

AI can be considered to be capable of independent development if it possesses one of the following qualities: it can learn from data in a manner unplanned by its designers; and the AI system is itself capable of developing new and improved AI systems.⁹⁴ The capacity for independent development, and the consequential ability to think differently from humans, is potentially one of the most beneficial features of AI. It may also enable an ADMS to make independent “moral” decisions. One of the most commonly cited examples⁹⁵ is the hypothetical case of an autonomous vehicle needing to choose between preserving the life of the driver and passengers or running over a group of pedestrians.⁹⁶ A less extreme, but potentially more widespread, example is an ADMS system designed to assist with triage and prioritisation of patients in hospital which may need to decide which patient ought to be treated sooner.⁹⁷

These features of AI pose at least four significant challenges to the rule of law:

- (1) The capacity for independent development may make it difficult to establish causality for the purpose of determining and allocating liability.⁹⁸ This can be compounded by the complex and dynamic socio-technical systems within which ADMS may be deployed.⁹⁹ This issue is widely debated in the literature – some scholars argue that it creates a ‘responsibility gap’¹⁰⁰ and suggest granting some form of legal personhood to AI as a way of restoring the chain of causation and limiting the liability of the owner.¹⁰¹ Other scholars have advocated the adoption of a human rights legislative framework, which would not permit reduced liability or responsibility for the decisions of an ADMS;¹⁰²
- (2) Foreseeability is central to any form of legal liability. This may need to be amended or replaced when determining liability where the decisions of an ADMS could not have been foreseen;¹⁰³
- (3) As the ADMS ‘learns’ from new data, the predictability and consistency of administrative decision-making may change over time. Where performance declines,¹⁰⁴ this may erode procedural fairness and administrative justice.¹⁰⁵ The principle of equality before the law may be undermined where performance declines *or* improves, as individuals with the same features are treated differently over time.¹⁰⁶ These challenges could be minimised, at least in part, by application of governance and design principles recommended by the Commonwealth Ombudsman;¹⁰⁷ and
- (4) The logic employed by the ADMS may evolve to differ substantially from a human decision-maker.¹⁰⁸ For example, a judge may accord different weights to criteria used in assessing the risk of re-offending or completely ignore variables relied upon by an ADMS. In some cases, it may even, in principle, be impossible to assess the outputs of an ADMS for accuracy or reliability.¹⁰⁹

These features raise a number of questions for parliament, ranging from specific issues such as how to define AI and ADM,¹¹⁰ to broad topics such as what this means for how to authorise decision-making and its delegation in legislation.

Translating law into code

The lawfulness of an ADMS hinges upon the accuracy of the code itself as well as the way it is applied to implement legislative intent. ADM may achieve more consistent implementation of the formal rules approved by Parliament than can be achieved by human officials.¹¹¹ Equally, translation from law into code may result in the alteration or loss of meaning due to factors such as:

- (1) The substance and breadth of the legislation (relevant provisions can be found at various locations in a piece of legislation, or across various pieces of legislation);
- (2) The structural complexity of the legislation (for example, preconditions can be conjunctive or disjunctive or there may be exceptions to preconditions);
- (3) The semantic complexity of the legislation (certain terms may be difficult to interpret); and
- (4) Any discretionary elements in the original legislation.¹¹²

Errors in translation may also occur due to the fact that programming languages are more “limited in their vocabulary” than human languages.¹¹³ Further, the computer programmers tasked with the translation process generally do not have relevant policy or legal expertise.¹¹⁴ Recent research suggests that further work needs to be done to address these issues and, more generally, bridge the gap between technical research in this area and the law.¹¹⁵

The law is dynamic.¹¹⁶ ADMS must be kept up to date to reflect policy changes and legislative amendments to ensure that decisions are being lawfully made.¹¹⁷ The law is also designed for human decision-makers, who can be more flexible in the application of the law and take into account complex ideas like justice and fairness. Human decision-makers are also able to exercise discretion or make evaluative judgments, such as whether a person is “a fit and proper person”. In contrast, algorithms are closed systems.¹¹⁸ As encoded, they may not capture all current factors, or possible future matters, of significance to the making of a decision.

Translating law into code raises questions for the *construction* of legislation and the *process* of making legislation: should the possible translation of some or all of the provisions of a statute into code affect the construction of that statute and, if so, how? Assuming the answer to this first question is in the affirmative, what advice may need to be provided to legislators for this end, and by whom?¹¹⁹ A converse question raised by several legal scholars is, to what extent will the automation of government decision-making itself shape the rule of law?¹²⁰

The translation of law into code also raises oversight challenges for Parliament. Do legislators possess, or have access to, the specialist knowledge required to assess whether or not the law has been accurately translated into code? This question is separate, but closely related, to the issue of scrutinising the operation of an ADMS.

Scrutinising automated decision-making

Provision of an explanation of a decision made by a public sector ADMS is important for maintaining public trust in government.¹²¹ However, four features of an ADMS may limit Parliament's capacity to scrutinise these decisions, especially when the system incorporates ML:

- (1) An ADMS often operates as one part of a highly complex and socio-technical system, potentially generating "acute challenges [when it comes to] seeking to identify lines of causal, moral and legal responsibility";¹²²
- (2) Intentional secrecy, when algorithms are treated as trade or state secrets, or when data cannot be released due to privacy or data protection laws;¹²³
- (3) Limited knowledge of how ADMS works, its limitations and capacity for error;¹²⁴ and
- (4) Even when in possession of the relevant expertise, there are human limitations to understanding the actions of complex algorithms working with large volumes of data.¹²⁵

A number of scholars and independent oversight bodies, such as Information Commissioners, have observed that the traditional lines between the public and private spheres are becoming increasingly difficult to navigate. For example, in December 2019, the AI Now Institute at New York University identified the private automation of public infrastructure (e.g. smart cities) as the first of seven emerging and urgent concerns from 2019.¹²⁶ This blurring of the public and private has implications for the amount of control government is able to exercise over the design and specification of ADMS,¹²⁷ and limits the possibilities for public participation in their development and deployment.¹²⁸ Further, having outsourced the design and coding of a system to the private sector, government may not possess the technical capability to assess any potential impact of the system before or after its deployment.¹²⁹

Parliament's capacity for oversight will depend on the suitability of the relevant accountability framework and access to knowledge about how these systems work.¹³⁰ Scholars have drawn attention to the "formidable technical and legal challenge"¹³¹ associated with establishing a rigorous accountability framework.¹³² To be effective, such a framework would by necessity be resource- and time-intensive,¹³³ a requirement at odds with the speed and scale at which these systems are being adopted¹³⁴ and at which they operate.¹³⁵ There is also the risk that transparency and accountability may lose their value: given the complexity of ADMS, explanations may, unwittingly or otherwise, conceal as much as they reveal.¹³⁶ These difficulties raise the question of what level of transparency and explainability should be required of AI?¹³⁷

5. Selected parliamentary responses

5.1 Legislation

Legislation has been made in many jurisdictions to authorise or regulate the use of AI by government, including:

- (1) Legislation that expressly authorises public sector use of ADMS (e.g. social security legislation);¹³⁸
- (2) Legislation which indirectly regulates AI (e.g. data protection and anti-discrimination laws);¹³⁹
- (3) Legislation focussed on AI-based technologies (e.g. autonomous vehicles);¹⁴⁰ and
- (4) Legislation that directly regulates the use of AI by government (e.g. algorithmic accountability legislation).¹⁴¹

This section focuses on legislation of the last type.¹⁴²

General Data Protection Regulation

The European Union's [General Data Protection Regulation](#) (GDPR) is a commonly cited example of legislation that directly regulates public and private sector use of ADM.¹⁴³ It also indirectly regulates ADM through provisions related to data protection. [Article 22](#) states:

The data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her.

Three exceptions are allowed, where a contract is entered into, where the 'data subject' provides explicit consent, and where authorised by a Member State under law that safeguards rights, freedoms and legitimate interests. In the first two cases, the 'data controller' must at least provide "the right to obtain human intervention on the part of the controller, to express his or her point of view and to contest the decision". In relation to personal data collected either directly or indirectly from a data subject for use in ADM, [Articles 13](#) and [14](#) require a 'data controller' to provide "meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject". Finally, [Article 35](#) provides that, where data processing is likely to result in a high risk to the rights and freedoms of natural persons, the data controller must carry out a data protection impact assessment (DPIA).

At face value, these Articles appear to provide for transparency in the use of ADM. However, their effectiveness is a subject of intense debate in the literature, and is highly dependent on their implementation and interpretation by data protection authorities and the courts.¹⁴⁴

Algorithmic Accountability legislation

Several jurisdictions have introduced or passed algorithmic accountability legislation that applies to the use of ADMS by government.¹⁴⁵ Some of this legislation has or will establish a task force to make recommendations on how to regulate ADMS, whereas other legislation aims to establish a regulatory framework for ADMS.

In January 2018, New York City Council became the first jurisdiction to introduce algorithmic accountability legislation.¹⁴⁶ [Local Law 49 of 2018](#) provided for the creation of a task force to provide recommendations on six topics related to the use of ADMS by government agencies.¹⁴⁷ These included development and implementation of procedures for providing an

explanation of a decision, determining whether a decision was biased, and addressing instances where bias occurred. In November 2019, the Automated Decision Systems Task Force (the Task Force) released its [final report](#). In response to recommendations from the Task Force, the Mayor of New York established an Algorithms Management and Policy Officer within the Mayor's Office of Operations by [Executive Order](#) to develop guidelines and best practice materials for agencies.¹⁴⁸ [New legislation](#) was also introduced that, if passed, would require annual reporting on ADMS used by city agencies.

Stakeholders have drawn attention to several features of Local Law 49 and the process adopted by the Task Force which placed limits on the recommendations that could be made, and their potential impact. Under the law, the Task Force's work and recommendations could only be advisory in nature.¹⁴⁹ Further, the law in effect exempted law enforcement use of ADMS from consideration.¹⁵⁰ The Executive Order to establish the Algorithms Management and Policy Officer did likewise.¹⁵¹ Other issues included limited access to information on existing uses of ADMS,¹⁵² minimal public participation in the process,¹⁵³ the City's central role in drafting the final report, and the inability to reach an agreed definition of ADMS.¹⁵⁴

Task forces and other similar bodies have also been established in [Vermont](#), [Alabama](#) and [New York State](#), and relevant legislation is pending in [Massachusetts](#) and [California](#). Legislators are appointed to two of the five bodies: in [Alabama](#), two members of the House and two members of the Senate; and in [Massachusetts](#), the House and Senate chairs of the joint committee on state administration and regulatory oversight.¹⁵⁵ The final report of the Vermont Artificial Intelligence Task Force made several recommendations, including the establishment of a permanent, independent artificial intelligence commission with a Representative and Senator amongst its members.

At the Federal level, if passed, the [Justice in Forensic Algorithms Act of 2019](#) will regulate any forensic ADMS used by federal agencies and prohibit the use of trade secrets privileges to prevent defence access to evidence in criminal proceedings. Washington appears to be the first State to have introduced legislation that will, if passed, regulate all public sector procurement and use of ADMS in the jurisdiction ([SHB 1655](#)).¹⁵⁶ As of July 2020, SHB 1655 remains at the Committee stage. Key provisions include:

- A requirement that the chief information officer make an inventory of all ADMS being used, developed or procured by state agencies (an algorithmic impact inventory report) that contains information about each ADMS such as:
 - Data collection, processing, generation and management;
 - Whether the ADMS has been tested for bias;
 - Whether the ADMS gives notice to an individual impacted by the ADMS;
 - Whether the agency is able to explain decisions made by the ADMS;
 - Whether the ADMS is subject to appeal, immediate suspension, and potential reversal by a human decision-maker in a timely manner;

- Any potential impacts on civil rights and liberties and potential disparate impacts on marginalised communities; and
- The fiscal impact, including initial acquisition costs, ongoing operating costs, cost savings that would be achieved through use of the ADMS, and any current or potential sources of funding; and
- A requirement that the chief information officer adopt rules for the development, procurement and use of ADMS by state agencies.

5.2 Inquiries

The Commonwealth parliamentary inquiries presented here focus more narrowly on statutory provisions regulating the use of ADM by government. The United Kingdom (UK) inquiries consider a broader set of AI-related issues.¹⁵⁷

Commonwealth Senate Standing Committee for the Scrutiny of Bills inquiries

The Commonwealth Senate Standing Committee for the Scrutiny of Bills has considered matters raised by the Commonwealth Government's use of ADMS in a number of inquiries.¹⁵⁸ [Scrutiny Digests 1, 3 and 4 of 2020](#) set out correspondence between the Committee and Assistant Treasurer regarding questions raised about two Cognate Bills: the Commonwealth Registers Bill 2019; and Treasury Laws Amendment (Registries Modernisation and Other Measures) Bill 2019. The Bills passed Parliament in June 2020. Commentary on these Bills from the Scrutiny Digests is presented here as a case study.

The registry regime created by the Cognate Bills provides for a Registrar to arrange for “the use, under the Registrar's control, of processes to assist decision making (such as computer applications and systems) for any purposes for which the Registrar may make decisions in the performance or exercise of the Registrar's functions or powers, other than decisions reviewing other decisions”¹⁵⁹. According to the explanatory memorandum, these provisions were included to improve the timeliness and accuracy of decision-making, and enable delivery of a high standard of service in an effective and efficient manner.

In general comments on “computerised decision-making”, the Committee noted:

... that administrative law typically requires decision makers to engage in an active intellectual process in respect of the decisions they are required or empowered to make. A failure to engage in such a process – for example, where decisions are made by a computer rather than by a person – may lead to legal error. In addition, there are risks that the use of an automated decision-making process may operate as a fetter on discretionary power, by inflexibly applying predetermined criteria to decisions that should be made on the merits of the individual case. These matters are particularly relevant to more complex or discretionary decisions and circumstances where the exercise of a statutory power is conditioned on the decision-maker taking specified matters into account or forming a particular state of mind.¹⁶⁰

After acknowledging the merits of seeking improved timeliness and accuracy in decision-making, the Committee requested advice from the Assistant

Treasurer in response to its expectation that the explanatory materials “include a more comprehensive justification for allowing *all* of the Registrar's administrative functions to be assisted or automated by computer programs except decisions reviewing other decisions” [emphasis in original].¹⁶¹ On the second occasion this question was sent to the Assistant Treasurer, the Committee asked if he would consider amending the Bill to: limit the types of decisions that can be made by computers; and/or provide that the Registrar must be satisfied that it is appropriate to use an ADMS to make a decision, rather than a person.¹⁶²

The Assistant Treasurer informed the Committee that any ADMS will be subject to the Registrar's functions and powers, the requirements of the provisions under which a decision is made, the existing review provisions, and the need to comply with administrative and other laws.¹⁶³ He also advised that he considered it would be appropriate to use ADMS for the ‘registry’ functions allocated to the Registrar, which generally do not rely on complex or discretionary matters. No ‘regulatory’ functions that require more considered decision-making or assessment were being allocated to the Registrar under the Bills.¹⁶⁴

In conclusion, the Committee drew its scrutiny concerns to the attention of senators with regards to the appropriateness of allowing the use of ADMS where: (1) there is limited guidance as to the types of decisions that can be made; and (2) where there is no requirement that the Registrar must be satisfied by reference to general principles that it is appropriate for a decision to be made by an ADMS rather than a person.¹⁶⁵

AI in the UK: ready, willing and able? (April 2018)

In April 2018, the UK House of Lords Select Committee on Artificial Intelligence published its [final report](#) on the economic, ethical and social implications of AI advances. The report made [74 findings and recommendations](#) across a range of issues, including some relevant to the use of ADM by government. Due to the speed at which the technology is being adopted, and to avoid policy being too reactive, the Committee recommended establishing a national policy framework for AI¹⁶⁶ and a cross-sector AI code for implementation across public and private sector organisations.¹⁶⁷ In contrast, it did not support a national regulatory framework, concluding that “[b]lanket AI-specific regulation, at this stage, would be inappropriate”.¹⁶⁸ Instead, it recommended that the [Government Office for AI](#), with the [Centre for Data Ethics and Innovation](#), “identify the gaps, if any, where existing regulation may not be adequate”.¹⁶⁹ The Committee also expressed concerns about whether existing legislation was capable of dealing with issues such as legal liability, criminal misuse of AI and data, and autonomous weapons, recommending that the Law Commission investigate legal liability issues as soon as possible.¹⁷⁰

The Committee expressed strong support for public sector adoption of AI:

- It recommended review and amendment of public procurement regulations to ensure greater uptake of AI in the public sector;
- It encouraged the Government to “be bold in its approach to the procurement of artificial intelligence systems, and to encourage the development of possible solutions to public policy challenges through

limited speculative investment and support to businesses which helps them convert ideas to prototypes, in order to determine whether their solutions are viable”; and

- It recommended the establishment of an online bulletin board to advertise public sector challenges with the potential for innovative tech- and AI-based solutions.¹⁷¹

The Committee also made findings and recommendations concerned with mitigating any negative impacts of AI:

- It stressed the importance of ensuring that members of the public are aware of how and when AI is used to make decisions about them;¹⁷²
- It noted that there will be times where regulators must be able to mandate transparency, even at the potential expense of “power and accuracy”; and
- It believed that it is not acceptable to deploy an ADMS which could have a substantial impact on an individual’s life, unless it can generate a full and satisfactory explanation of the decisions it makes. This may mean delaying deployment of some ADMS until solutions are found.¹⁷³

Algorithms in decision-making (May 2018)

In May 2018, the House of Commons Science and Technology Committee handed down its final report into algorithms in decision-making. The report included [15 findings and recommendations](#) covering issues such as applications of ADM, bias, accountability, transparency and the regulatory environment. It welcomed the then Government-proposed [Centre for Data Ethics & Innovation](#) (CDEI), noting that the “challenge will be to secure a framework which facilitates and encourages innovation but which also maintains vital public trust and confidence”.¹⁷⁴ It recommended that the Centre should be required to report annually to Parliament so that Parliament could scrutinise its effectiveness.

Other key recommendations for the UK Government included:

- Public sector datasets should be made available to algorithm developers, in the form of ‘data trusts’¹⁷⁵;
- A list of where algorithms with significant impacts are being used within Central Government should be produced, published and maintained, to aid private sector involvement and transparency;
- A ministerial champion should be appointed to provide government-wide oversight of algorithms used by the public sector;
- The CDEI should evaluate and prioritise tools for identifying and tackling bias in algorithms, such as audits of algorithms; and
- The CDEI and Information Commissioner should be commissioned to evaluate existing data protection legislation, the use of ‘data protection impact assessments’, and the extent of algorithm oversight by sector-specific regulators, with a view to making legislative reform proposals where necessary.

6. Current and proposed oversight and accountability responses to the use of automated decision-making by government

This section presents a selection of current and proposed oversight responses to the use of ADMS by government, as made or implemented by a range of bodies including parliamentary committee inquiries, independent oversight bodies, the judiciary and legal scholars.¹⁷⁶

Parliamentary committees and groups

Different types of parliamentary committees have examined public sector use of ADMS, as well as AI more broadly. For example:

- Select committees have been established solely for the purpose of investigating AI;¹⁷⁷
- Other select committees have chosen to investigate ADMS and AI as part of their broader remit (e.g. science and technology committees);¹⁷⁸ and
- Standing committees investigate ADMS and AI insofar as it is relevant to their role (e.g. legislation review committees).¹⁷⁹

Members from two Parliaments have formed all-party parliamentary groups on AI – the [Victorian All-Party Parliamentary Group on Artificial Intelligence](#); and the UK [All-Party Parliamentary Group on Artificial Intelligence](#).

Independent oversight bodies

A number of recommendations have been made for an expansion of the role of existing independent oversight bodies, or the establishment of new bodies.¹⁸⁰ Suggestions put forward in Australia include:

- Improved oversight of the collection, retention and use of biometric information;¹⁸¹
- Establishing an independent body to identify key areas for regulation and response, along the lines of the Australian Communications and Media Authority;¹⁸² and
- Establishing an AI Safety Commissioner to take a national leadership role in the development and use of AI in Australia.¹⁸³

A broader range of suggestions have been made by international sources, including establishment of a body more closely linked with Parliament:

- An independent, advisory body that reports directly to Parliament, providing Parliament with a body capable of undertaking inquiries for the whole of Parliament or confidential inquiries for individual Members, and access to a group of experts without having to convene a parliamentary committee;¹⁸⁴
- An Algorithm Commission to provide a “vital social resource to restore agency for public institutions – to government, Parliament, the courts and civil society – by supplying the expert understanding which is required for effective law-making, guidance and control” of ADMS;¹⁸⁵

- An expanded role for a Chief Information Officer, to make an inventory of all public sector use of ADMS and to develop rules for the development, procurement and use of ADMS by state agencies;¹⁸⁶ and
- A new AI or digital ombudsperson to audit and investigate illegal and inappropriate use of technology in the public and private sectors.¹⁸⁷

A registry of public sector automated decision-making systems

The creation and maintenance of a registry, or inventory, of public sector ADMS has been suggested as a key means of improving transparency and accountability.¹⁸⁸ Several international jurisdictions have carried out preliminary work in this area, including New Zealand, the UK and Europe.¹⁸⁹

As of July 2020, no Australian jurisdiction appears to have commenced any work in this area. In her 2018-19 Annual Report, the NSW Information Commissioner listed “inventories of machine enhanced decision-making systems and databases” as one of several administrative practices that can safeguard the legislated commitment to open government and the fundamental right of access to information.¹⁹⁰ At the national level, the Australian Human Rights Commission proposed that the Commonwealth Government should conduct a comprehensive review of its use of ADMS.¹⁹¹

Improved legislative scrutiny

In 2016, legal scholar Andrew Le Sueur identified several ways in which Parliament could respond to the use of ADMS by government which appear to have received little attention in the literature.

According to Le Sueur, Parliament “should consider automation issues when Bills and draft statutory instruments are scrutinised during the legislative process”.¹⁹² Le Sueur proposed a set of questions that could be asked of any executive power-granting provision, including whether there is express legal authority to use ADMS if the decision is, *in effect*, going to be made by a computer. Two other sources have proposed similar checklists: a 2020 study commissioned by a European Parliamentary committee which investigated this issue;¹⁹³ and the 2019 Commonwealth Ombudsman publication, *Automated Decision-Making Better Practice Guide*.¹⁹⁴

The most fundamental proposal put forward by Le Sueur is that ADM “requires us to reconsider what we regard as ‘the law’.”¹⁹⁵ In conventional thinking, the text of an Act or statutory instrument is ‘the law’. When a Member of Parliament scrutinises a decision-making power in a Bill, or a similar power in delegated legislation, they are looking at text that may or will be used to make an ADMS – ‘the app’. Parliamentarians are therefore scrutinising something that sits:

...between the policy design and the rules that will *really* apply to individuals.

So here is the radical proposal: we should treat ‘the app’ (the computer programs that will produce individual decisions) as ‘the law’. It is this app, not the text of legislation, that will regulate the legal relationship between citizen and state in automated decision-making. Apps should, like other forms of legislation, be brought under democratic control. They should in principle be subject to parliamentary oversight, perhaps like secondary legislation on an

affirmative (it requires the express approval of Parliament to become valid) and negative procedure (it becomes valid unless annulled by Parliament within a set time).¹⁹⁶

7. Conclusion

The use of ADMS by government raises a broad set of parliamentary, legal and ethical challenges. As argued by many scholars, these challenges are likely to increase in scope and significance as ADMS become more widespread and to the extent that these systems incorporate machine learning algorithms. The 2019 digital government strategy, [Beyond Digital](#), suggests that the NSW Government has extensive, public sector-wide plans to increase adoption of ADMS, and AI more broadly. Other relevant NSW Government developments include the [Rules as Code](#) project, which commenced in 2019, and the [upcoming release](#) of a NSW AI Strategy and a NSW AI Ethics Framework.

As of July 2020, there appear to be no legislative provisions that *expressly* authorise the NSW Government to use an ADMS to make a decision. Further, there are only a few legislative provisions which could be described as allowing computers to assist a decision-making process. As noted by the Commonwealth Ombudsman, it seems safe to conclude at a minimum that the legislative authority for an ADMS to make a decision will “only be beyond doubt if specifically enabled by legislation”.

There is a range of opinion on whether Parliaments should legislate to control the use of ADMS by government. While some scholars consider current laws to be adequate, the majority argue that, at the very least, there are gaps in existing legislative frameworks. This debate raises two challenges for Parliaments considering the use of ADMS in society: Are there significant gaps within existing legislation? When and how should Parliament legislate to control government use of ADMS? A related issue is the question of whether parliamentarians possess, or have access to, the requisite technical knowledge. This pertains equally to the process of making legislation as it does to Parliament’s capacity to scrutinize the design, development and deployment of ADMS by government.

¹ Bassot E, [Ten issues to watch in 2019](#), European Parliamentary Research Service, January 2019. Other important digital technologies include big data, robotics, autonomous vehicles, 3D printing, blockchain, the Internet of Things (IoT), virtual reality, augmented reality, and advanced analytics.

² See for example: McGinnis J, Accelerating AI, in (eds) Barfield W and Pagallo U, [Research Handbook on the Law of Artificial Intelligence](#), December 2018; and Bassot E, [Ten issues to watch in 2019](#), European Parliamentary Research Service, January 2019. This process is commonly described as “digital transformation” (see for example: Negreiro M and Madiaga T, [Digital Transformation](#), European Parliamentary Research Service, July 2019; digital.nsw, [Transformation](#), 25 May 2020 [website – accessed 14 July 2020]) or the “digital revolution” (see for example: Digital Transformation Agency, [Digital Transformation Strategy](#), November 2018), terms which, it could be argued, disguise its [far-reaching impacts](#), many of which have the potential to inflict significant harm on large numbers of people (Alston P, [Digital Technology, Social Protection and Human Rights: Report](#), The Special Rapporteur for extreme poverty, October 2019). For an argument against the position that digital change is accelerating, see: Stanford J, [The future of work: five contrarian insights](#), Centre for Future Work, 13 April 2020

³ Walsh T, [Understanding AI](#), in (eds) Bertram C et al., [Closer to the Machine: Technical, social, and legal aspects of AI](#), Office of the Victorian Information Commissioner, August 2019, p 7-22

- ⁴ Walsh T, [Understanding AI](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 7-22; Chen F and Jianlong Z, [AI in the Public Interest](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 63-76
- ⁵ Artificial Intelligence Forum of New Zealand, [Artificial Intelligence: Shaping a Future New Zealand](#), May 2018, p 14
- ⁶ Kritikos M, [Artificial Intelligence ante portas: Legal & ethical reflections](#), European Parliamentary Research Service, March 2019; Jackson M, [Regulating AI](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 121-138; Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019.
- ⁷ Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019; Walsh T et al., [The effective and ethical development of artificial intelligence: An opportunity to improve our wellbeing](#), Report for the Australian Council of Learned Academies, July 2019; Alston P, [Digital Technology, Social Protection and Human Rights: Report](#), The Special Rapporteur for extreme poverty, October 2019; and Lord Sales, [Algorithms, Artificial Intelligence and the Law](#), The Sir Henry Brooke Lecture for BAILII, London, 12 November 2019;
- ⁸ O'Neil C, [Weapons of math destruction: how big data increases inequality and threatens democracy](#), 2016; Eubanks V, [Automating inequality: how high-tech tools profile, police, and punish the poor](#), 2017; Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455.
- ⁹ Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455; Lord Sales, [Algorithms, Artificial Intelligence and the Law](#), The Sir Henry Brooke Lecture for BAILII, London, 12 November 2019; and Australian Law Reform Commission, [The Future of Law Reform: A suggested program of work 2020-25](#), December 2019
- ¹⁰ NSW Department of Fair Trading, [Annual Report 1999-2000](#), Volume 1 of 2, November 2000
- ¹¹ Perry M, [iDecide: Digital pathways to decision](#), 2019 CPD Immigration Law Conference, 21 – 23 March 2019. Zalnieriute M et al cite sources documenting the use of ADM by government in the 1980s. Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455
- ¹² Senate Standing Committees on Community Affairs, [Centrelink's Compliance Program: Inquiry Update – April 2020](#), April 2020 [website – accessed 15 July 2020]
- ¹³ See for example: Crawford K et al., [AI Now 2019 Report](#), AI Now Institute, December 2019; and [The Mandarin, COVID-19, digital trust and health surveillance](#), 28 April 2020
- ¹⁴ Other parliamentary developments include motions and resolutions on artificial intelligence. For example, on [10 February 2020](#), the European Parliament debated a [motion for a resolution on automated decision-making processes: ensuring consumer protection and free movement of goods and services](#) (the Resolution). Passed on [12 February 2020](#), the Resolution urged the European Commission to undertake a number of actions related to consumer choice, trust and welfare, and the safety and liability framework for products. Also on 12 February 2020, the UK House of Lords [debated](#) the implications of predictive and decision-making algorithms in public policy. The debate was initiated by Lord Clement-Jones, who had chaired the 2018 inquiry into AI in the UK (see section 5.2 of this paper). Noting the widespread adoption of ADMS by councils and central government, he highlighted a lack of sufficient public sector transparency, the absence of a single coherent regulatory framework for the area, the absence of a body able to advise existing regulators on relevant issues, and the need for appointment of a Minister responsible for ensuring use of ADM meets certain standards (in this case, the [Nolan standards](#)).
- ¹⁵ See the following for further discussion of the difficulties associated with defining AI: UK House of Lords Select Committee on Artificial Intelligence, [AI in the UK: ready, willing and able?](#) April 2018; Dawson D et al., [Artificial Intelligence: Australia's Ethics Framework](#), Data61 CSIRO, 2019; Independent High-Level Expert Group on Artificial Intelligence, [A definition of AI: Main capabilities and scientific disciplines](#), European Commission, April 2019; Surden H, [Artificial Intelligence and Law: An Overview](#), *Georgia State University Law Review*, Summer 2019, 35(4), p 1,304-1,337; Martinez R, [Artificial Intelligence: Distinguishing between types & definitions](#), *Nevada Law Journal*, 1 June 2019, 19(3); Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019; Samoili S et al., [AI Watch. Defining Artificial Intelligence. Towards an operational definition and taxonomy of artificial intelligence](#), Publications Office of the European Union, 2020.

- ¹⁶ See for example: Surden H, [Artificial Intelligence and Law: An Overview](#), *Georgia State University Law Review*, Summer 2019, 35(4), p 1,308; Jordan M, [Artificial Intelligence—The Revolution Hasn't Happened Yet](#), *Harvard Data Science Review*, 23 June 2019
- ¹⁷ Artificial Intelligence Forum of New Zealand, [Artificial Intelligence: Shaping a Future New Zealand](#), May 2018, p 14
- ¹⁸ Artificial Intelligence Forum of New Zealand, [Artificial Intelligence: Shaping a Future New Zealand](#), May 2018; Yeung K, [Responsibility and AI](#), Prepared by the Expert Committee on human rights dimensions of automated data processing and different forms of artificial intelligence, Council of Europe study DGI(2019)05, September 2019
- ¹⁹ Mills M, [Artificial Intelligence in Law: The State of Play 2016 \(Part 1\)](#), *Legal Executive Institute*, 23 February 2016
- ²⁰ Boucher P, [Artificial intelligence: How does it work, why does it matter, and what can we do about it?](#), Scientific Foresight Unit (STOA), European Parliamentary Research Services, June 2020
- ²¹ See: Defense Advanced Research Projects Agency (DARPA), [AI Next Campaign](#), no date [website – accessed 18 March 2020]; Boucher P, [How artificial intelligence works](#), Briefing, European Parliamentary Research Service, March 2019.
- ²² Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019; Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019
- ²³ As explained by Boucher: “Three key concepts regularly emerge in discussions of future AI. First, artificial general intelligence (AGI), which refers to AI that is not limited to specific domains, but performs intelligently in a wide range of contexts and problem spaces. The second is artificial superintelligence (ASI), which refers to AI with higher levels of general intelligence than typical humans. The third is singularity which, in this context, refers to the moment where AI becomes intelligent and autonomous enough to generate even more intelligent and autonomous AI”. Boucher P, [How artificial intelligence works](#), Briefing, European Parliamentary Research Service, March 2019, p 8.
- ²⁴ Ward J, When and how should we invite artificial intelligence tools to assist with the administration of law? A note from America, *Australian Law Journal*, 2019, 93(3), p 176-181. See also [Box 2](#) in Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019. For additional commentary on the importance of the contextual components, see for example: McGregor L et al., [International Human Rights Law as a Framework for Algorithmic Accountability](#), *International and Comparative Law Quarterly*, April 2019, p 309-343; Goldenfein J, [Algorithmic Transparency and Decision-Making Accountability: Thoughts for buying machine learning algorithms](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 41-60; Yeung K, [Responsibility and AI](#), Prepared by the Expert Committee on human rights dimensions of automated data processing and different forms of artificial intelligence, Council of Europe study DGI(2019)05, September 2019
- ²⁵ Office of the Australian Information Commissioner, [Guide to Data Analytics and the Australian Privacy Principles](#), March 2018; Walsh T et al., [The effective and ethical development of artificial intelligence: An opportunity to improve our wellbeing](#), Report for the Australian Council of Learned Academies, July 2019; Boucher P, [Artificial intelligence: How does it work, why does it matter, and what can we do about it?](#), Scientific Foresight Unit (STOA), European Parliamentary Research Services, June 2020
- ²⁶ Office of the Australian Information Commissioner, [Guide to Data Analytics and the Australian Privacy Principles](#), March 2018
- ²⁷ Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019
- ²⁸ Walsh T, [Understanding AI](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 7-22
- ²⁹ Surden H, [Artificial Intelligence and Law: An Overview](#), *Georgia State University Law Review*, Summer 2019, 35(4), p 1,304-1,337
- ³⁰ Walsh T, [Understanding AI](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 11
- ³¹ Walsh T et al., [The effective and ethical development of artificial intelligence: An opportunity to improve our wellbeing](#), Report for the Australian Council of Learned Academies, July

- 2019; Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455.
- ³² Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019; Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455.
- ³³ Walsh T et al., [The effective and ethical development of artificial intelligence: An opportunity to improve our wellbeing](#), Report for the Australian Council of Learned Academies, July 2019.
- ³⁴ Other terms for ADM include [algorithmic decision systems](#) and [AI-informed decision making](#).
- ³⁵ Le Sueur A, [Robot Government: Automated Decision-Making and its Implications for Parliament](#), in (eds) Horne A and Le Sueur A, *Parliament: legislation and accountability*, 2016, p 183-202
- ³⁶ Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019; CSIRO Data 61, [Data-driven infrastructure](#), no date [website – access 15 July 2020]
- ³⁷ Commonwealth Ombudsman, [Automated Decision-Making Better Practice Guide](#), 2019
- ³⁸ Sources: Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455; Transport for NSW, [Mobile phone detection cameras](#), 28 February 2020 [website – accessed 19 March 2020]; Commonwealth Senate Standing Committees on Community Affairs, [Design, scope, cost-benefit analysis, contracts awarded and implementation associated with the Better Management of the Social Welfare System initiative](#), 21 June 2017.
- ³⁹ In [November 1999](#), the NSW Department of Fair Trading introduced a “new computer system to support the administration of the registration of business names and the incorporation of associations. The new system, known as BRS, was designed and developed in-house. It is a state of the art Windows based system that enables a substantial level of automated decision-making to be introduced into the registration process.”
- ⁴⁰ The examples cited here and in the text were identified during the process of writing this paper. Further research would be required to identify a more comprehensive list of NSW Government uses of ADM. As discussed in section 6 of this paper, a number of parliamentary inquiries, independent oversight bodies, legal scholars, and key stakeholders have recommended that government’s commit to publishing a registry of ADM used by the government. Other current examples include: [ADM in the grants division](#) of the Legal Aid Commission; Fire & Rescue NSW’s [Automated Decision Aid System for Hazardous Incidents](#); Sydney Cricket Ground [facial recognition technology in combination with CCTV](#); [Idemia Livescan technology](#) used by NSW Police to collect and analyse criminals’ biometric data and demographics; on [23 April 2020](#), “NSW signed an MOU with NEC Corporation, a leader in the integration of IT and network technologies, and its wholly-owned subsidiary NEC Australia, to be partners in the co-creation and development of a world-leading Digital Safer and Smarter City environment. The three Parties will engage collectively in underpinning a position for NSW as a global force in the ICT sector”. The [new partnership](#) will “focus on digital government, public safety, aviation, and health and smart transportation, leveraging NEC’s biometrics, along with 5G, IoT and AI technologies”; [NSW Ministry of Health](#) is leveraging health information and analytics to connect care across the system. The development of “algorithms is enabling NSW Health to identify patient cohorts by those who are likely to benefit and those less likely to benefit from a program, based on historical data. These insights could generate cost savings of around 35 per cent, with no reduction in outcomes. The Ministry has worked with local health districts to enhance their data analytics capability to realise potential benefits and to evolve the targeted, proactive recruitment of individuals across the state who are very likely to benefit from an integrated care intervention program”; [Speed cameras](#) are “automated speed enforcement tools that supplement enforcement conducted by the NSW Police Force”. Mobile speed cameras were first used in NSW in 1991; and the [scheduling system for mobile speed cameras](#) uses an algorithm “designed to randomise the camera schedule to ensure that camera deployment is not predictable”.
- ⁴¹ In September 2019, the Government introduced the [Road Transport Amendment \(Mobile Phone Detection\) Bill 2019](#) (the Bill), which, if enacted, would amend the *Road Transport Act 2013* so that “an object being held by a driver and shown in a photograph from a device approved for mobile phone use offences is deemed to be a mobile phone unless the accused driver can establish that it was not”. A 2019 [Legislative Council inquiry](#) into the Bill found that this was “the first occasion that the Parliament is proposing to legislate on

the assumption that a significant part of the task of identifying criminal conduct is being handled by artificial intelligence". As of September 2020, the Bill is at the Consideration in Committee of the Whole stage in the Legislative Council.

- ⁴² Mobile Automatic Number Plate Recognition (MANPR) technology was [first trialled](#) in NSW in the [second half of 2009](#). MANPR technology appears to have been first adopted by the NSW Police in 2010-11, with the incoming O'Farrell Government having [committed](#) to additional installations of MANPR in police vehicles in the lead up to the 2011 NSW general election. The Roads and Transport Authority (RTA) [first adopted](#) ANPR in 2010-11, with vehicles detected by RTA enforcement cameras being checked for valid registration and CTP insurance.
- ⁴³ The [Data Analytics Centre](#) (DAC) was established by the Department of Finance, Services and Innovation in the second half of 2015 [to](#) "build data analytics capability across government and see the deployment of cutting-edge data analytics to support more efficient strategic decision making and service design. The insights gained through advanced data analytics has tremendous transformative potential for the way government services are delivered." In [December 2017](#), DAC was moved to the NSW Treasury. On [5 November 2019](#), H2O.ai "the open source leader in artificial intelligence (AI) and machine learning (ML), today announced that the New South Wales Government Data Analytics Centre has chosen its award winning and industry leading automatic machine learning platform, [H2O Driverless AI](#), to provide critical machine learning capabilities. By using H2O.ai, the NSW Department of Customer Service will be able to deliver more personalized and targeted programs to the citizens of NSW with improved services, policies and innovations."
- ⁴⁴ It could be reasonably assumed that almost all long-term focus areas for the eight clusters involve the adoption of ADM, or AI more broadly. Examples of long-term focus areas for each of the other seven clusters include: Education – "Predictive and behavioural analytics support decision making"; Health – "Enhanced preventative health analytics"; Planning, Industry & Environment – "Implement sensory data collection, automation and AI technologies that allows us to provide a personalised experience for our customers as well as define and execute programs to maintain sustainable environment and thriving communities and industry"; Premier & Cabinet – "Premier and Cabinet organisations have embedded technologies such as artificial intelligence to efficiently deliver services to our stakeholders"; Stronger Communities – "Deliver an advanced 'Connected ecosystem' and contemporary insights platform, that supports preventive policing and adapts to the changing nature of crime"; Transport – "Intelligent analytics and efficient transport planning"; and Treasury – "Adopt predictive analytics tools to support decision making for outcomes and performance for the sector".
- ⁴⁵ Related developments include the NSW Productivity Commissioner's October 2019 Discussion Paper, which included a [section](#) on Rules as Code, and work by Data 61 and CSIRO on [building](#) an "open platform based on a machine-readable version of current laws, acts, policies and other regulatory documents" with the goal of enabling "the birth of a new RegTech industry powered by digital legislation".
- ⁴⁶ In April 2020, the NSW Minister for Customer Service, Victor Dominello, gave [a speech](#) at a [regtech webcast](#) on the NSW Government's vision for better regulation through the adoption of "smart regulation ... a digital customer data-focused, data-driven regulation". Minister Dominello stated that, if he could he would "wave his magic wand and go into the Parliament tomorrow and insist that everything that comes in the form of our regulation is in the framework of rules as code. The reality is in a digital world, this was where we needed to be."
- ⁴⁷ See for example: Perrault R et al., [Artificial Intelligence Index Report 2019](#), Human-Centred AI Institute, Stanford University, December 2019; and Bird et al., [The ethics of artificial intelligence: Issues and initiatives](#), Panel for the Future of Science and Technology (STOA), European Parliamentary Research Service, March 2020
- ⁴⁸ Biases can produce discriminatory outcomes for certain groups in society; directly, where a person is treated less favourably because of an attribute protected by law, such as race; and indirectly, where an ADMS may be "fair in form but discriminatory in outcome" (Jackson M, [Regulating AI](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 121-138). See also: Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019
- ⁴⁹ There are significant technical, political and legal challenges associated with achieving "meaningful transparency" of an ADMS. Two legal scholars argue that "access to code will not usually be necessary to achieve meaningful transparency, and sometimes will not even help [as a computer program will usually be significantly harder for human beings to read

and understand than mathematical or logical notation or natural language]. What public entities should be more focused on is undertaking the design, procurement, and implementation of algorithmic processes in more thoughtful and transparent ways” (Brauneis R and Goodman E, [Algorithmic Transparency for the Smart City](#), *Yale Journal of Law & Technology*, 2018, 20, p 177-178). Another legal scholar observes that “transparency might simply deliver to data subjects an account of what is being done to their personal data, tailored to a certain idea of what individuals might want to hear, and what they can perceive. The point is that transparency can become an instrument that distracts us or even actively undermines the capacity to meaningfully challenge or bring oversight to these decision-making processes” (Goldenfein J, [Algorithmic Transparency and Decision-Making Accountability: Thoughts for buying machine learning algorithms](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 60). On transparency more generally, see also: Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019.

- ⁵⁰ According to the European Parliamentary Research Service, there are [three main approaches](#) which may be adopted to explain AI: (1) The ‘black box’ approach involves explaining the decision without knowledge of the algorithm’s code; (2) The ‘white box’ approach assumes that it is possible to analyse and explain the code; and (3) The ‘constructive approach’ involves incorporating explainability into the design of the automated decision system. Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019
- ⁵¹ See for example: Commonwealth Ombudsman, [Automated Decision-Making Better Practice Guide](#), 2019; Goldenfein J, [Algorithmic Transparency and Decision-Making Accountability: Thoughts for buying machine learning algorithms](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 41-60; Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019; and Boucher P, [Artificial intelligence: How does it work, why does it matter, and what can we do about it?](#), Scientific Foresight Unit (STOA), European Parliamentary Research Services, June 2020
- ⁵² Australian Law Reform Commission, [The Future of Law Reform: A suggested program of work 2020-25](#), December 2019
- ⁵³ Commonwealth Ombudsman, [Automated Decision-Making Better Practice Guide](#), 2019; Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019
- ⁵⁴ Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019
- ⁵⁵ Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019
- ⁵⁶ Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019
- ⁵⁷ Le Sueur A, [Robot Government: Automated Decision-Making and its Implications for Parliament](#), in (eds) Horne A and Le Sueur A, *Parliament: legislation and accountability*, 2016, p 183-202; Desai D and Kroll J, [Trust but Verify: A guide to algorithms and the law](#), *Harvard Journal of Law & Technology*, Fall 2017, 31(1), p 1-64
- ⁵⁸ Dawson D et al., [Artificial Intelligence: Australia’s Ethics Framework](#), Data61 CSIRO, 2019; Bateman W, [Automating Discretionary Decision-Making in the Public Sector: Legal Dimensions](#), ANU College of Law Research Paper No. 20.10, May 2020b
- ⁵⁹ One legal scholar observes that, because ADMS are designed, developed and implemented by people, it is “quite possible for ADM systems to make decisions which by the law’s standards are irrational. The classic statement of irrationality is that it exists where a decision is ‘so outrageous in its defiance of logic or of accepted moral standards that no sensible person who had applied his mind to the question could have arrived at it’. There is no particular reason why a machine could not fail this test; where a decision would be irrational if it were made by a human, so too will it be irrational where it is made by a machine. Overcoming the assumption that decisions made by machines must be rational, while a psychological step rather than a legal one, is important.” Cobbe J, [Administrative law and the machines of government: judicial review of automated public-sector decision-making](#), *Legal Studies*, December 2019, 39(4), p 641-642
- ⁶⁰ A key feature of ML algorithms is “the ability to discern statistically significant relationships between data points, enabling them to make a decision or prediction ... Big data tells us nothing about causation, although it may suggest interesting avenues for further research into causal links” (McCann D et al., [Controlled by Calculations? Power and accountability](#)

[in the digital economy, Part 3: The rise of algorithms](#), The New Economics Foundation, 2018). Some authors therefore argue that “there are technical reasons why AI should not be used to perform certain tasks such as predicting individual social outcomes. Indeed, some of the most damaging examples of the misuse of algorithms come from the use of algorithms for tasks for which they are not well suited, such as predicting whether an individual will reoffend or perform well at work” (Boucher P, [Artificial intelligence: How does it work, why does it matter, and what can we do about it?](#), Scientific Foresight Unit (STOA), European Parliamentary Research Services, June 2020, p 56). See also: Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019; and Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019.

⁶¹ See also: Le Sueur A, [Robot Government: Automated Decision-Making and its Implications for Parliament](#), in (eds) Horne A and Le Sueur A, *Parliament: legislation and accountability*, 2016, p 183-202; UK Information Commissioner’s Office, [Guidance on AI and data protection](#), July 2020.

⁶² Cobbe identifies several other common law questions of relevance: when using ADM would constitute unlawful sub-delegation by a nominated decision-maker; when using ADM would result in unlawfully fettering discretion; when ADM would be used for improper purposes; when the need to give reasons for a decision precludes the use of ADM; and when the use of contracted-out ADM would be unlawful. Cobbe J, [Administrative law and the machines of government: judicial review of automated public-sector decision-making](#), *Legal Studies*, December 2019, 39(4), p 636-655

⁶³ Commonwealth Ombudsman, [Automated Decision-Making Better Practice Guide](#), 2019, p 6

⁶⁴ See for example: Brauneis R and Goodman E, [Algorithmic Transparency for the Smart City](#), *Yale Journal of Law & Technology*, 2018, 20, p 103-176; Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455; Cobbe J, [Administrative law and the machines of government: judicial review of automated public-sector decision-making](#), *Legal Studies*, December 2019, 39(4), p 636-655; and Kuziemski M and Misuraca G, [AI governance in the public sector: Three tales from the frontiers of automated decision-making in democratic settings](#), *Telecommunications Policy*, July 2020, 44(6).

⁶⁵ Lord Sales, [Algorithms, Artificial Intelligence and the Law](#), The Sir Henry Brooke Lecture for BAILII, London, 12 November 2019

⁶⁶ Perry M, [iDecide: Digital pathways to decision](#), 2019 CPD Immigration Law Conference, 21 – 23 March 2019

⁶⁷ A search of NSW legislation and regulations in force was conducted using key terms such as “automated”, “computer” and “machine”. The following provisions were identified which allow computers to assist a decision-making process: the use of “specific computer programs and databases” for carrying out assessments as part of the biodiversity assessment method (s 6.8 of the [Biodiversity Conservation Act 2016](#)); the use of “computer and other electronic resources, to assist the Electoral Commissioner in the conduct and administration of elections” (s 80 of the [Electoral Act 2017](#)); provision for the use of automated message systems in the formation of contracts, including between business and community and the government (Part 2A of the [Electronic Transactions Act 2000](#)); the random selection of prospective jurors (s 12 of [Jury Act 1977](#)); the use of “computer and other electronic resources to assist in the conduct and administration” of local government elections (cl 275A of the [Local Government \(General\) Regulation 2005](#)); the use of camera devices to detect speeding offences (Schedule 1A of the [Marine Safety Act 1998](#); and Part 5.3 of the [Road Transport Act 2013](#)) and illegal mobile phone use (s 134(1)(h) of the [Road Transport Act 2013](#)); and the use of an approved hydrological computer model to assist in making water sharing decisions, as provided for in at least 12 Water Sharing Plans (see for example, cl 31 of the [Water Sharing Plan for the Barwon-Darling Unregulated and Alluvial Water Sources 2012](#)). The definition of data in the [Data Sharing \(Government Sector\) Act 2015](#) is also worth noting: “any facts, statistics, instructions, concepts or other information in a form that is capable of being communicated, analysed or processed (whether by an individual or by a computer or other automated means)” (s 4).

⁶⁸ Perry M, [iDecide: Administrative decision-making in the digital world](#), *Australian Law Journal*, 2017, 91(1); Perry M, [iDecide: Digital pathways to decision](#), 2019 CPD Immigration Law Conference, 21 – 23 March 2019

⁶⁹ Perry M, [iDecide: Administrative decision-making in the digital world](#), *Australian Law Journal*, 2017, 91(1), p 31

- ⁷⁰ Commonwealth Ombudsman, [Automated Decision-Making Better Practice Guide](#), 2019, p 9. See also: Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019, p 91
- ⁷¹ Perry M, *iDecide: Administrative decision-making in the digital world*, *Australian Law Journal*, 2017, 91(1); Perry M, [iDecide: Digital pathways to decision](#), 2019 CPD Immigration Law Conference, 21 – 23 March 2019; Ng and O’Sullivan, [Deliberation and Automation – When is a Decision a “Decision”?](#) *Australian Journal of Administrative Law*, 2019, 26(1), p 21-34
- ⁷² Zalnieriute M et al., [From Rule of Law to Statute Drafting: Legal issues for algorithms in government decision-making](#), University of New South Wales Law Research Series, February 2020, p 16
- ⁷³ Jackson M, [Regulating AI](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 121-138
- ⁷⁴ Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019; and Perry M, [iDecide: Digital pathways to decision](#), 2019 CPD Immigration Law Conference, 21 – 23 March 2019.
- ⁷⁵ UK House of Lords Select Committee on Artificial Intelligence, [AI in the UK: ready, willing and able?](#) April 2018
- ⁷⁶ Coglianese C and Lehr D, [Regulating by Robot: Administrative Decision Making in the Machine-Learning Era](#), *The Georgetown Law Journal*, June 2017, 105(5), p 1215. See also: [chapters 8](#) and [9](#) of the 2018 House of Lords inquiry, *AI in the UK: ready, willing and able?*; and Fai M and Chan E, [AI – new forms of old problems](#), Gilbert + Tobin, 10 February 2020 [website – accessed 16 July 2020].
- ⁷⁷ See for example: Buiten M, [Towards Intelligent Regulation of Artificial Intelligence](#), *European Journal of Risk Regulation*, March 2019, 10(1), p 41-59; and Gaon A and Stedman I, [A Call to Action: Moving Forward with the Governance of Artificial Intelligence in Canada](#), *Alberta Law Review*, July 2019, 56(4), p 1137-1166.
- ⁷⁸ Goldenfein J, [Algorithmic Transparency and Decision-Making Accountability: Thoughts for buying machine learning algorithms](#), in (eds) Bertram C et al., *Closer to the Machine: Technical, social, and legal aspects of AI*, Office of the Victorian Information Commissioner, August 2019, p 41-60
- ⁷⁹ Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019, p 89-90
- ⁸⁰ Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019, p 42
- ⁸¹ Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019, p 92
- ⁸² Guihot M et al., [Nudging Robots: Innovative Solutions to Regulate Artificial Intelligence](#), *Vanderbilt Journal of Entertainment and Technology Law*, 2017, 20(2), p 385-456; and Leins K, [AI: It’s time for the law to respond](#), *Pursuit*, University of Melbourne, 17 February 2020 [website – accessed 17 July 2020]
- ⁸³ Lord Sales, [Algorithms, Artificial Intelligence and the Law](#), The Sir Henry Brooke Lecture for BAILII, London, 12 November 2019. This is but one of a number of tensions that may arise between different principles and values when adopting ADM: Whittlestone J et al., [Ethical and societal implications of algorithms, data, and artificial intelligence: a roadmap for research](#), Nuffield Foundation, 2019
- ⁸⁴ Commonwealth Ombudsman, [Automated Decision-Making Better Practice Guide](#), 2019; Perry M, [iDecide: Digital pathways to decision](#), 2019 CPD Immigration Law Conference, 21 – 23 March 2019; Ng Y-F and O-Sullivan M, *Deliberation and automation – when is a decision a “decision”?* *Australian Journal of Administrative Law*, 2019, 26(1), p 21-34; Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455; Office of the Victorian Information Commissioner, [Closer to the Machine: Technical, social and legal aspects of AI](#), Bertram C et al. (eds), August 2019; Australian Human Rights Commission, [Human Rights and Technology](#), Discussion Paper, December 2019; Zalnieriute M et al., [From Rule of Law to Statute Drafting: Legal issues for algorithms in government decision-making](#), University of New South Wales Law Research Series, February 2020. Bateman W, *Algorithmic Decision-Making and Legality: Public Law Dimensions*, ANU College of Law Legal Studies Research Paper Series, No 20.8, May 2020a; and Bateman W, [Automating Discretionary Decision-Making in the Public Sector: Legal Dimensions](#), ANU College of Law Research Paper No. 20.10, May 2020b. Bateman W (2020b) notes that an ADMS could be applied to making discretionary decisions under the Commonwealth’s [Paid Parental Leave Act 2010](#), although he does not comment on whether or not this is happening in practice.

Section 108(2) of the Act provides a discretionary power for revocation of an employer determination if the employer is found to not be a fit and proper person. Section 305 of the Act provides that the Secretary may “arrange for use of computer for the use, under the Secretary’s control, of computer programs for any purposes for which the Secretary may make decisions under this Act”.

- ⁸⁵ Commonwealth Ombudsman, [Automated Decision-Making Better Practice Guide](#), 2019, p 9
- ⁸⁶ Ng Y-F and O-Sullivan M, Deliberation and automation – when is a decision a “decision”? *Australian Journal of Administrative Law*, 2019, 26(1), p 21-34; and Gaon A and Stedman I, [A Call to Action: Moving Forward with the Governance of Artificial Intelligence in Canada](#), *Alberta Law Review*, July 2019, 56(4), p 1137-1166. A February 2020 report for the Administrative Conference of the United States notes that “the new algorithmic governance tools differ from past rounds of public sector innovation in the sense that they are often more *deeply embedded* in the work of government ... the expanding menu of applications, particularly those that perform enforcement and adjudication tasks, is rapidly moving the new algorithmic governance tools to the center (sic) of the coercive and (re-) distributive power of the state. In addition, the growing sophistication and power of AI is nudging agencies toward fully automated decision-making, leaving progressively less to human discretion and judgment. Government officials who use those tools may, to borrow from the AI lexicon, be increasingly left “out of the loop.” Finally, leaps in analytic power mean more displacement of discretion at all levels of bureaucracy. Growing sophistication may permit algorithmic tools to continue “steadily climb[ing] up the bureaucratic ladder,” shaping, and in some cases displacing, the decisions of more senior agency decision-makers. Engstrom D et al., [Government by Algorithm: Artificial Intelligence in Federal Administrative Agencies](#), Report submitted to the Administrative Conference of the United States, February 2020, p 11
- ⁸⁷ See also: Ng Y-F and O-Sullivan M, Deliberation and automation – when is a decision a “decision”? *Australian Journal of Administrative Law*, 2019, 26(1); Barfield W, *Preface* in (eds) Barfield W and Pagallo U, *Research Handbook on the Law of Artificial Intelligence*, 2018
- ⁸⁸ Kritikos M, [Artificial Intelligence ante portas: Legal & ethical reflections](#), European Parliamentary Research Service, March 2019, p 6
- ⁸⁹ In 2019, Rex Martinez argued that AI is “being developed at an alarming rate and will without a doubt be one of the world’s most significant developments. There is going to be a legal vacuum within the next decade or two where courts and legislatures will struggle to get a handle on how to deal with AI. Rather than being reactive, courts, legislatures, or any legal body for that matter, will be better off navigating these new waters with some guidance from a statutory definition”. Martinez R, [Artificial Intelligence: Distinguishing between types & definitions](#), *Nevada Law Journal*, 2019, 19(3), p 1039
- ⁹⁰ Weaver J, Regulation of artificial intelligence in the United States, in (eds) Barfield W and Pagallo U, *Research Handbook on the Law of Artificial Intelligence*, 2018, p 160
- ⁹¹ Weaver J, Regulation of artificial intelligence in the United States, in (eds) Barfield W and Pagallo U, *Research Handbook on the Law of Artificial Intelligence*, 2018, p 159
- ⁹² Walsh T et al., [The effective and ethical development of artificial intelligence: An opportunity to improve our wellbeing](#), Report for the Australian Council of Learned Academies, July 2019
- ⁹³ Turner J, *Robot Rules: Regulating Artificial Intelligence*, 2019; Kritikos M, [Artificial Intelligence ante portas: Legal & ethical reflections](#), European Parliamentary Research Service, March 2019
- ⁹⁴ Turner J, *Robot Rules: Regulating Artificial Intelligence*, 2019
- ⁹⁵ Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019
- ⁹⁶ Both the public and private sectors are investigating deployment of autonomous vehicles. For an example of possible public sector deployment, see: Engstrom D et al., [Government by Algorithm: Artificial Intelligence in Federal Administrative Agencies](#), Report submitted to the Administrative Conference of the United States, February 2020
- ⁹⁷ See for example: Raso F et al., [Artificial Intelligence & Human Rights: Opportunities and Risks](#), Berkman Klein Center for Internet & Society at Harvard University, 25 September 2018; Turner J, *Robot Rules: Regulating Artificial Intelligence*, November 2018, p 69; Obermeyer Z et al., [Dissecting Racial Bias in an Algorithm that Guides Health Decisions for 70 Million People](#), Proceedings of the Conference on Fairness, Accountability and Transparency, January 2019; Sullivan H and Schweikart S, [Are Current Tort Liability Doctrines Adequate for Addressing Injury Caused by AI?](#) *AMA Journal of Ethics*, 2019,

- 21(2), p E160-166; *Sky News*, [Coronavirus: NHS hospitals turn to algorithms to help clear post-COVID backlog](#), 26 June 2020.
- ⁹⁸ Kritikos M, [Artificial Intelligence ante portas: Legal & ethical reflections](#), European Parliamentary Research Service, March 2019
- ⁹⁹ Yeung K, [Responsibility and AI](#), Prepared by the Expert Committee on human rights dimensions of automated data processing and different forms of artificial intelligence, Council of Europe study DGI(2019)05, September 2019
- ¹⁰⁰ Yeung K, [Responsibility and AI](#), Prepared by the Expert Committee on human rights dimensions of automated data processing and different forms of artificial intelligence, Council of Europe study DGI(2019)05, September 2019
- ¹⁰¹ Kritikos M, [Artificial Intelligence ante portas: Legal & ethical reflections](#), European Parliamentary Research Service, March 2019
- ¹⁰² McGregor L et al., [International Human Rights Law as a Framework for Algorithmic Accountability, International and Comparative Law Quarterly](#), April 2019, p 309-343
- ¹⁰³ Walsh T et al., [The effective and ethical development of artificial intelligence: An opportunity to improve our wellbeing](#), Report for the Australian Council of Learned Academies, July 2019
- ¹⁰⁴ Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455
- ¹⁰⁵ Perry M, *iDecide: Administrative decision-making in the digital world*, *Australian Law Journal*, 2017, 91(1)
- ¹⁰⁶ Perry M, [iDecide: Digital pathways to decision](#), 2019 CPD Immigration Law Conference, 21 – 23 March 2019.
- ¹⁰⁷ Commonwealth Ombudsman, [Automated Decision-Making Better Practice Guide](#), 2019, p 17
- ¹⁰⁸ Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455
- ¹⁰⁹ Walsh T et al., [The effective and ethical development of artificial intelligence: An opportunity to improve our wellbeing](#), Report for the Australian Council of Learned Academies, July 2019
- ¹¹⁰ See for example: Hoadley D, [Artificial Intelligence and National Security](#), Congressional Research Service, updated by Saylor K on 21 November 2019; Martinez R, [Artificial Intelligence: Distinguishing between types & definitions](#), *Nevada Law Journal*, 2019, 19(3), p 1015-1042
- ¹¹¹ Le Sueur A, [Robot Government: Automated Decision-Making and its Implications for Parliament](#), in (eds) Horne A and Le Sueur A, *Parliament: legislation and accountability*, 2016, p 195
- ¹¹² Hogan-Doran D, [Computer says “no”: automation, algorithms and artificial intelligence in Government decision-making](#), *The Judicial Review*, September 2017, 13(3), p 1-39. See also Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455
- ¹¹³ Perry M, [iDecide: Digital pathways to decision](#), 2019 CPD Immigration Law Conference, 21 – 23 March 2019.
- ¹¹⁴ Moses L, [Is Your Algorithm Dangerous?](#) *IEEE Technology and Society Magazine*, September 2018, 37(3), p 20-21
- ¹¹⁵ Desai D and Kroll J, [Trust but Verify: A guide to algorithms and the law](#), *Harvard Journal of Law & Technology*, Fall 2017, 31(1), p 1-64; Selbst A et al., [Fairness and Abstraction in Sociotechnical Systems](#), Proceedings of the Conference on Fairness, Accountability, and Transparency, January 2019; and Cobbe J, [Administrative law and the machines of government: judicial review of automated public-sector decision-making](#), *Legal Studies*, December 2019, 39(4), p 636-655.
- ¹¹⁶ Perry M, [iDecide: Digital pathways to decision](#), 2019 CPD Immigration Law Conference, 21 – 23 March 2019.
- ¹¹⁷ Commonwealth Ombudsman, [Automated Decision-Making Better Practice Guide](#), 2019
- ¹¹⁸ Lord Sales, [Algorithms, Artificial Intelligence and the Law](#), The Sir Henry Brooke Lecture for BAILII, London, 12 November 2019
- ¹¹⁹ A [related and broader question](#) is the degree to which ADMS could be employed to assist legislators in the process of making any and all forms of legislation.
- ¹²⁰ Le Sueur A, [Robot Government: Automated Decision-Making and its Implications for Parliament](#), in (eds) Horne A and Le Sueur A, *Parliament: legislation and accountability*, 2016; and Zalnieriute M et al., [From Rule of Law to Statute Drafting: Legal issues for algorithms in government decision-making](#), University of New South Wales Law Research Series, February 2020.
- ¹²¹ Commonwealth Ombudsman, [Automated Decision-Making Better Practice Guide](#), 2019

- ¹²² Yeung K, [Responsibility and AI](#), Prepared by the Expert Committee on human rights dimensions of automated data processing and different forms of artificial intelligence, Council of Europe study DGI(2019)05, September 2019, p 62
- ¹²³ Burrell J, [How the machine 'thinks': Understanding opacity in machine learning algorithms](#), *Big Data & Society*, January-June 2016, p 1-12; and Zalnieriute M et al., [The Rule of Law and Automation of Government Decision-Making](#), *Modern Law Review*, 2019, 82(3), 425-455
- ¹²⁴ Lord Sales, [Algorithms, Artificial Intelligence and the Law](#), The Sir Henry Brooke Lecture for BAILII, London, 12 November 2019
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- ¹³⁷ Walsh T et al., [The effective and ethical development of artificial intelligence: An opportunity to improve our wellbeing](#), Report for the Australian Council of Learned Academies, July 2019
- ¹³⁸ For example, section 6A of the [Social Security \(Administration\) Act 1999](#) (Cth).
- ¹³⁹ The AI Now 2019 report argues that [data protection legislation](#) is foundational to regulatory frameworks for AI. Some of the most recent and relevant examples in this area include the GDPR (see section 5.1 of this paper) and the [California Consumer Privacy Act](#) (CCPA). The regulation of [biometric data collection and use](#) features prominently in recent legislative developments. Other areas of legislation indirectly related to AI include [anti-discrimination](#), [intellectual property](#) and [product liability](#).
- ¹⁴⁰ For example: [Motor Vehicles \(Trials of Automotive Technologies\) Amendment Act 2016](#) (SA)
- ¹⁴¹ AI-related legislation of less relevance to this paper includes legislation that seeks to respond to the potential societal impacts of widespread AI adoption: for example, the possibility of increased unemployment due to the [automation of work](#). Two bills were introduced to Congress in 2019 in response to this issue: the [AI Jobs Act of 2019](#); and the [Workers' Right to Training Act](#). As of July 2020, both bills had been referred to a committee for report.
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- ¹⁵⁴ NYC Automated Decision Systems Task Force, [New York City Automated Decision Systems Task Force Report](#), November 2019
- ¹⁵⁵ The [New York State Artificial Intelligence, Robotics and Automation Commission](#) includes three appointees made by the Senate and three appointees made by the House. The New York Act provides that “two shall be appointed by the temporary president of the senate and one by the minority leader of the senate; [and] two shall be appointed by the speaker of the assembly and one by the minority leader of the assembly” (s 2). Two bodies include members appointed by the judiciary: In Massachusetts, the Chief Justice of the Supreme Court or a designee; and in Vermont, a person appointed by the Chief Justice of the Supreme Court.
- ¹⁵⁶ First introduced on 25 January 2019, [HB 1655](#) was replaced with a [Substitute HB 1655](#) (SHB 1655) by the House Committee on Innovation, Technology & Economic Development on 22 February 2019. House Bill Report HB 1655 provides a [comparison](#) of the Original Bill with the Substitute Bill. A [similar law](#) appears to have been in place in France since 2016 (Castelluccia C and Le Metayer D, [Understanding algorithmic decision-making: Opportunities and challenges](#), Panel for the Future of Science and Technology, European Parliamentary Research Service, March 2019). The law appears to only be available in French
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- ¹⁷⁶ Other suggested responses include: the [adoption](#) of a regulatory sandbox to test ADMS for compliance with human rights; the [adoption](#) of Algorithmic Impact Assessments as part of the public sector procurement and use of ADMS (see also the [AI Now 2019 Report](#) and [Artificial Intelligence: Australia's Ethics Framework – A Discussion Paper](#)); a [temporary legal moratorium](#) on public sector use of facial recognition technology (see also the UK House of Commons Science and Technology Committee inquiry into [The work of the Biometrics Commissioner and the Forensic Science Regulator](#); and additional work towards [identifying gaps in the legislation](#). On this point, it is worth noting that no research was found on addressing this issue in NSW during the process of writing this paper. In December 2019, the Australian Law Reform Commission [released](#) possible terms of reference for an inquiry into ADM.
- ¹⁷⁷ For example: the 2018 UK [House of Lords Select Committee on Artificial Intelligence](#); and the 2020 European Parliament's [Special Committee on Artificial Intelligence in a Digital Age](#).
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- ¹⁷⁹ For example: the Commonwealth [Senate Standing Committee on Scrutiny of Bills](#); and [five European Parliamentary Committees](#) – Culture & Education; Internal Market and Consumer Protection; Industry, Research and Energy; Legal Affairs; and Civil Liberties, Justice & Home Affairs.
- ¹⁸⁰ These recommendations are sometimes accompanied by suggestions for new AI-related government bodies. Examples of bodies that have been established to date include: the [ARC Centre for Excellence for Automated Decision-Making and Society](#); the European Commission's [AI Watch](#); the UK's [Centre for Data Ethics and Innovation](#), and [Office for Artificial Intelligence](#); the [New York State Artificial Intelligence, Robotics and Automation Commission](#); the [Alabama Commission on Artificial Intelligence](#); and the New York City [Automated Decision Systems Task Force](#). Proposals for new AI-related government bodies include: a new [oversight agency](#) in Canada that reports to a Minister; a [commission](#) in Massachusetts; and an [Automated Decision Systems Task Force](#) in California.
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