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Radical Uncertainty and Artificial Intelligence policy issues for Aotearoa New Zealand

Abstract

This article explores the intricacies of policymaking in the 21st century, with a focus on Aotearoa New Zealand's approach to artificial intelligence (AI). The analysis underscores the challenges presented by risk, uncertainty, and especially radical (fundamental) uncertainty, which complicates the formulation of robust AI policies. Using Aotearoa New Zealand as a case study, the article delves into the multifaceted policy challenges AI presents, emphasising the need for adaptive policymaking, stakeholder engagement, a precautionary approach and ethical considerations. In short, a balanced interplay of evidence, values and power in the policymaking process is required.

Keywords adaptive policymaking, risk, radical uncertainty, artificial intelligence (AI), ethics, Aotearoa New Zealand

The task of policymaking is ever more complex, not least in the fast-evolving field of artificial intelligence (AI). Aotearoa New Zealand, like many other countries, is trying to navigate the tricky waters of managing and regulating AI (Barredo Arrieta et al., 2020). This is made even more challenging by the concepts of risk, uncertainty and radical (fundamental) uncertainty, which are critical to understanding and managing the complexities of modern policymaking (Kay and King, 2020).

AI has the potential to transform many aspects of our lives, from healthcare to transportation and agriculture. However, it also raises important ethical, social and economic questions, such as the impact of automation on jobs, the potential for bias in algorithmic decisions, and the misuse of AI for harmful purposes (Barredo Arrieta et al., 2020). To address these issues, policymakers need to take a thoughtful and comprehensive approach that considers all the different dimensions of risk, uncertainty and radical (fundamental) uncertainty.

Policymaking in the 21st century

In the 21st century, policymaking has become an increasingly complex task due to rapid technological advancements, global interconnectedness, and the dynamic nature of socio-economic challenges. The traditional approach to policymaking,

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which often involves linear thinking and a focus on isolated issues, is no longer sufficient to address the multifaceted challenges of today's world (Head, 2016).

One of the key concepts that complicate policymaking is risk, which is traditionally defined as a situation where the probabilities of different outcomes are known or can be estimated (Knight, 1921). Policymakers often use quantitative methods, such as cost–benefit analysis, to assess the potential impacts of different policy options and make decisions based on the balance between potential gains and losses (Fischhoff et al., 1993).

Uncertainty, on the other hand, refers to situations where the probabilities of different outcomes are unknown or cannot be estimated accurately (Knight, 1921). This can occur due to a lack of information, conflicting evidence, or the unpredictable nature of certain events (Gluckman, 2014). Policymakers often struggle to make decisions under conditions of uncertainty because traditional decision-making tools, such as cost–benefit analysis, may not be applicable or reliable (Cairney and Kwiatkowski, 2017).

Radical (fundamental) uncertainty refers to situations where the possible outcomes and their probabilities are not only unknown, but also unknowable (Kay and King, 2020). This type of uncertainty often arises in complex systems, where the interactions between different components are non-linear and can lead to emergent properties that are difficult to predict (Stirling, 2010). Policymaking under conditions of radical uncertainty requires a different approach, such as adaptive management, which involves continuously monitoring the effects of policies and adjusting them as new information becomes available (Dewulf and Biesbroek, 2018).

The concepts of risk, uncertainty and radical uncertainty necessitate different approaches to decision making, thereby complicating the policymaking process. Managing risk typically involves the use of quantitative methods and scenario planning (Aven and Renn, 2009), while addressing uncertainty requires a more qualitative approach, relying on expert judgement (Aven, 2016) and robust decision-making strategies that can adapt to changing circumstances (Hallegatte, 2009). Radical uncertainty, on the other hand, necessitates a more flexible and adaptive approach, recognising the impossibility of predicting the future with any degree of certainty (Beckert, 2013).

> … the policy challenges associated with AI in Aotearoa New Zealand are multifaceted and necessitate a comprehensive and coordinated approach involving various stakeholders, including government, industry, academia and civil society.

In short, the concepts of risk, uncertainty and radical (fundamental) uncertainty each introduce a layer of complexity to the policymaking process. Policymakers need to be aware of these concepts and adopt appropriate decision-making strategies to address the challenges of the 21st century.

The policy challenges of AI for Aotearoa New Zealand

In Aotearoa New Zealand, the deployment and development of AI present a myriad of policy challenges that are crucial to address for harnessing its full potential. AI is a transformative technology with the capability to revolutionise various sectors, including healthcare, agriculture, transportation and public services. It can foster economic growth, enhance the efficiency and effectiveness of services, and provide solutions to complex challenges faced by the country (AI Forum of New Zealand, 2018). However, the rise of AI also poses significant policy challenges that need to be meticulously addressed to maximise its benefits while minimising its associated risks.

One of the paramount policy challenges is ensuring that the development and deployment of AI are in alignment with the values and priorities of citizens. This includes adhering to the principles of the Treaty of Waitangi, the foundational document of the country, and the principles of partnership, participation, and protection it embodies. Furthermore, it involves addressing ethical concerns related to privacy, fairness, transparency, and accountability. There are also growing concerns about the potential impact of AI on employment, social inequality, and the competitiveness of local businesses (Productivity Commission, 2020).

Another significant policy challenge pertains to the development of the requisite infrastructure, skills and capabilities essential for reaping the benefits of AI. This encompasses investments in research and development, education and training, and digital infrastructure. Additionally, there is a need for a regulatory framework that facilitates innovation while safeguarding the public interest (New Zealand Government, 2020).

Overall, therefore, the policy challenges associated with AI in Aotearoa New Zealand are multifaceted and necessitate a comprehensive and coordinated approach involving various stakeholders, including government, industry, academia and civil society.

Analysing the most significant challenge: radical uncertainty

The policy challenges associated with AI in Aotearoa New Zealand can be analysed through the lens of risk, uncertainty and radical (fundamental) uncertainty. However, of these three, radical uncertainty is arguably the most significant challenge.

As noted, radical uncertainty refers to situations where the possible outcomes and their probabilities are unknown or unknowable. In the case of AI, this pertains to the unforeseeable consequences and

impacts of the technology, which are not only difficult to predict, but also challenging to quantify. For example, the advent of AI brings about ethical dilemmas, such as algorithmic bias and decision making by machines, the full implications of which are yet to be understood (ibid.).

While risk and uncertainty are also important considerations, they are not as significant as radical uncertainty in this context. As noted, risk refers to situations where the possible outcomes and their associated probabilities are known, and thus can be managed through quantitative methods and scenario planning (Kaplan and Garrick, 1981). Uncertainty, on the other hand, refers to situations where the possible outcomes are known, but their probabilities are not, requiring a more qualitative approach relying on expert judgement (Knight, 1921). However, both risk and uncertainty assume a level of knowledge about the possible outcomes, which is not the case with AI, as its impacts are fundamentally uncertain and unpredictable.

However, radical (fundamental) uncertainty poses a more significant challenge because it is not possible to predict the future developments in AI with any certainty. The rapid pace of technological advances, the emergence of new forms of AI, and the potential for unforeseen social and economic impacts make it extremely difficult for policymakers to envisage all possible scenarios and plan accordingly (Kay and King, 2020). For example, the development of general artificial intelligence (AGI), which refers to machines that can perform any intellectual task that a human can do, is a topic of ongoing debate and speculation among experts. While some believe that AGI is still many years away, others argue that it could be developed much sooner (Russell, Dewey and Tegmark, 2015). The timeline and implications of AGI are highly uncertain, and this creates significant challenges for policymakers in Aotearoa New Zealand and around the world.

Furthermore, the global nature of AI development means that Aotearoa New Zealand is not operating in a vacuum. Decisions made by other countries, international organisations, and private sector actors can all have an impact on the AI landscape in Aotearoa New Zealand. This adds another layer of complexity and uncertainty to the policymaking process.

> The case of AI in Aotearoa New Zealand serves as a pertinent example of how radical uncertainty presents significant challenges in formulating policies that are robust, fair, and widely accepted by all stakeholders.

Therefore, while risk and uncertainty certainly play a role in the policymaking process for AI, they are not as significant as radical uncertainty, which necessitates a more flexible and adaptive approach. This involves recognising the impossibility of predicting the future with any degree of certainty and developing robust decision-making strategies that can adapt to changing circumstances (Taleb, 2007).

Addressing the policy challenge

Given the challenge of radical (fundamental) uncertainty in the context of AI in Aotearoa New Zealand, policymakers need to adopt a more flexible and adaptive approach in their policy methods and practices.

Adaptive policymaking

This approach acknowledges the uncertainty of the future and the unpredictability of the impacts of AI. It involves creating policies that are flexible and can be easily adapted as circumstances change or as more information becomes available. This may involve implementing pilot programmes, conducting regular reviews of policies, and being open to making necessary adjustments (Boston, 2016).

Stakeholder engagement

Including a wide range of stakeholders in the policymaking process can help ensure that different perspectives and potential impacts are considered. This includes not only industry experts, but also representatives from the public, academia and civil society organisations (New Zealand Government, 2020).

Precautionary approach

Given the potential for unforeseen and potentially harmful impacts of AI, a precautionary approach should be adopted. This involves taking preventative action in the face of uncertainty, and not waiting until there is complete evidence of harm before taking action (Stirling, 2007).

Ethical considerations

The development and implementation of AI raise numerous ethical concerns, such as privacy, bias, and decision making by machines. Policymakers should actively consider these ethical implications and develop policies that promote ethical practices and safeguard the interests of all stakeholders (Floridi et al., 2018).

Robust decision making

This involves developing strategies that perform well under a wide range of possible futures, rather than trying to predict a single, most likely future (Lempert, 2019). It may involve scenario planning, where different possible future scenarios are developed, and strategies are developed for each.

In addressing these challenges, the role of evidence, values and power must be considered. While evidence-based policymaking is crucial, it must be acknowledged that under conditions of radical uncertainty, there will always be a limit to the evidence available. Therefore, decision making will also need to be guided by values, such as fairness, transparency and the protection of human rights. Additionally, the power dynamics between

different stakeholders must be considered, to ensure that the interests of all parties are fairly represented, and that no single group has undue influence over the policymaking process (Head, 2010).

Conclusion

The process of policymaking in the 21st century is increasingly complicated by the concepts of risk, uncertainty and radical (fundamental) uncertainty. These factors necessitate different approaches to decision making and make the policy landscape particularly challenging. The case of AI in Aotearoa New Zealand serves as a pertinent example of how radical uncertainty presents significant challenges in formulating policies that are robust, fair, and widely accepted by all stakeholders. To address these challenges, policymakers must adopt a multifaceted approach that involves adaptive policymaking, stakeholder engagement, a precautionary approach, ethical considerations, and robust decision making. Moreover, they must also consider the role of evidence, values, and power in the decision-making process to ensure that the interests of all parties are fairly represented and that no single group has undue influence over the policymaking process. Ultimately, by adopting such an approach and considering the interplay of evidence, values and power, policymakers can formulate policies that are better suited to the complex and uncertain landscape of the 21st century.

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