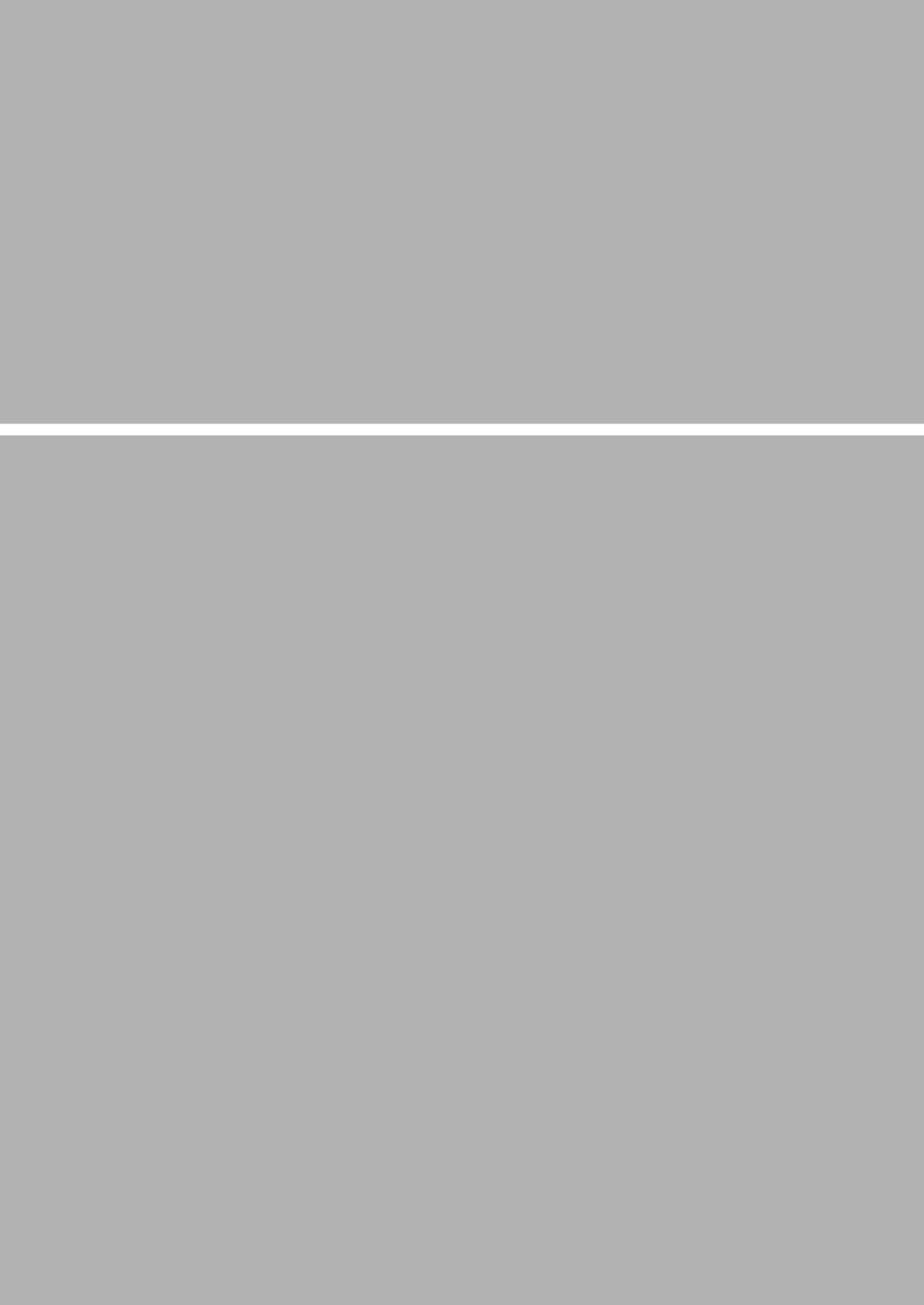




# Chapter 2

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## AI Epistemology in Singapore



## INTRODUCTION – AI AS INDISPUTABLE FUTURE

In the Summer of 2024, I went to the National University of Singapore's innovation hub for an event about sustainable AI futures. This innovation hub is the home of AI Singapore; a State-Owned Enterprise set up in 2017 to spearhead Singapore's drive into an AI future. Their two stated aims are to facilitate all Singaporean businesses to use AI systems in their operations, and to upskill Singaporean citizens to use AI. The event was part of a lecture series run by AI Singapore towards their latter aim.

From the outside AI Singapore's office was suitably municipal for a partially government owned company. However, even from the street there were hints of Silicon Valley's design influence. Through the glass revolving door, I could see a large LED screen which wrapped around the elevator bank on the ground floor, and beyond that a plant wall. The screen pronounced the event we were all there for, the "AI Innovation Tech Talk: Sustainable AI."

Before the talk there was a buffet dinner in the room with the plant wall. I sat at a table with two men, one from Brunei who worked in oil and gas, and the other from Singapore, who worked in gas and oil. Both were programmers for their respective companies and bonded over their shared desire to upskill in what might become a precarious sector due to climate change. In other words, the event had found its audience among young tech professionals with concerns about climate change, though perhaps more from a business perspective than an ecological one.

My hastily made judgement was somewhat confirmed when the lecture began with a business pitch. The head of AI Singapore outlined the company's approach: they offer government grants and technical support to businesses integrating AI into their operations. Further, young professionals can join their 6-month training scheme and become AI engineers. The argument went that in a future where many businesses had integrated AI into their processes, many more AI engineers would be required. With this came a twin promise, AI would make businesses more efficient and create new secure jobs for young people. However, these promises came with a threat. If people failed to adapt, they would not lose their jobs or businesses to AI, but to someone else using AI.

Business pitch delivered; the lecture proceeded to discuss sustainable AI. The speakers proposed two solutions to the skyrocketing ecological costs

of AI. First, a technical solution called “Tropical Data Centres.” This approach aims to raise the safe operating temperatures of Data Centres from 20–25°C to 27°C thus lowering cooling needs and saving energy. The second was less technical, make AI less accurate from around 90% accuracy down to 70%, this would save on computing power, and energy required for reinforcement training. By making the technology less accurate and more efficient AI could become sustainable.

To me, there seemed to be a clear conflict between the business pitch and the sustainability lecture. As Pasek (2023) has pointed out, the energy demands of AI technology are not driven by users, but by data centres. More reliance on AI will inevitably lead to the construction of more data centres, each of which consumes more energy. Even if we use technology less, or more efficiently, data centres are “always on” and consuming resources. The goal, therefore, should be preventing the construction of more data centres (Pasek 2023, 4). Even if these data centres could be more efficient, AI Singapore’s stated aim to help businesses integrate AI into their systems processes, therefore contradicts these improvements in sustainability.

When the Q&A opened, I pointed this out and asked what their plans were to ensure no more new data centres were built. And everyone laughed, even my new friends from the buffet dinner. For several seconds, which felt like a lifetime, the panel did not answer. Then the head of AI Singapore Lawrence Liew stepped in and explained that AI technology was here to stay, therefore we had to use it. That being the case, we needed to use it as sustainably as possible.

As I sat on the bus back to my hostel, I thought about this answer. Prior to this event I had assumed that people within organisations like AI Singapore were either unaware of or simply did not care about the environmental impact of AI. However, what this event made clear was that people were aware and even gave the performance of caring about the environment at these events. It seemed that whilst these events professed to care about the sustainability of AI these considerations were overwhelmed by the imperative to use AI and grow the economy.

## The Singapore Smart Nation

Established in 2017, AI Singapore is one node in the sprawling Smart Nation project which the government initiated in 2014. AI Singapore has two roles within the Smart Nation, first it creates training programmes

about AI technologies for government employees and the public. Second, it works as an intermediary between the state and businesses. In this role they offer government grant money, and technical support to Singaporean businesses which want to integrate AI into their processes.

The Smart Nation project began with Data Spark (Kong and Woods 2018) a collaboration between the Government and Singtel<sup>52</sup> which installed 1000 sensors all over the city which measure everything from traffic levels, to weather conditions and crime rates. This was later expanded in 2016 with Polcam and Polcam 2.0 which installed 7300 cameras (Koay 2017). Additionally, the data from buses and trains are collected through tap to pay systems. This network of cameras and sensors is referred to as the “Smart Nation Sensor Platform.” To support this huge flow of information, there are also an unknown number of data centres across the Island.

This data flows through the data centres and into GovTech, which assumes two crucial roles. Firstly, they develop software and services like “Singpass,” a platform enabling Singaporeans to access various amenities, from healthcare to public swimming pools. These services, in turn, generate even more data. Secondly, GovTech sorts, parses, and anonymises this data before disseminating it to government agencies and State-Owned Enterprises. Within the government, this data fuels the creation of fiscal, technological, and social policies. This process of sorting through the masses of data which are collected daily across the Island is managed using AI systems. Although the exact implications of this data remain elusive, it is evident that the Smart Nation has become the dominant governance paradigm of the Singaporean State. Despite my efforts, officials at GovTech and the related agencies never returned my emails.

Given AI Singapore’s role as an intermediary between the state, businesses, and the public, I was able to attend their AI training sessions and public events. These spaces provided valuable insight into how AI is imagined by, and implemented within, the governance structures of the Singaporean State. In this chapter, I examine how the twin concepts of the Smart Nation and AI shape the epistemologies of the state, and how

52 50% of shares in Singtel are held by Temasek Holdings, the Singaporean government investment firm. As of 2024 Singtel has 4.6 million mobile users in Singapore. (Singtel 2024 Factsheet Singtel . Accessed: 24 February 2026.

these epistemologies, in turn, are shaped by the political ideology of the ruling People's Action Party (PAP).

I begin by exploring why AI has become so compelling in Singapore that the prospect of *not* using it is considered laughable. I then draw on ethnographic examples to examine how AI functions epistemologically. These conceptions are then situated within the PAP's post-colonial and neoliberal ideologies. Through analysis of key state texts, including then-Prime Minister Lee Hsien Loong's launch speech for the Smart Nation initiative and the 2020 Digital Government Blueprint, I show how the Smart Nation project regurgitates foundational ideas of the PAP.

Ultimately, I argue that the AI's epistemology is aligned with the PAP's long-standing ideology in ways which foster a form of 'smooth', anti-political governance. This brings us to a central tension: what happens when this epistemology, rooted in order, efficiency, and prediction, confronts the inherently messy, unpredictable realities of governance? A question taken up in the following chapter.

### Why Is the Idea of Not Using AI Laughable?

In 2014, then Prime Minister Lee Hsien Loong launched Singapore's Smart Nation initiative stating that the project would allow Singaporeans to "create possibilities for ourselves beyond what we imagined possible" (Loong 2014<sup>53</sup>). Possibilities which would be "enabled seamlessly by technology, that offers exciting opportunities for all." (Digital Government Office 2018<sup>54</sup>) The promise of this new Smart Nation was that with the assistance of infrastructural projects like Data Spark, the government would be able to track everything in the city, from weather patterns to traffic incidents. No information would be outside the reach of the state no matter how trivial. As Loong put it at the time "Imagine if we can tap on everyone's local knowledge and anyone can contribute data: animal sightings, traffic incidents, potential hazards for cyclists, even the best mee pok or nasi lemak" (Loong 2014). With this huge well of data, the Smart Nation promised to make the economy more productive, and the state more responsive.

This trust in quantification is nothing new in state craft and governance. In both the UK and France in the 19th century societies of statistics

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53 PMs Office (2014) "PM Lee Hsien Loong at the Smart Nation Launch." Accessed: 7 November 2025.

54 Smart Nation Office (2018) "Smart Nation: The Way Forward" Accessed: 7 November 2025.

emerged, which urged governments of the time to govern based on numerical facts. They argued that using quantification to govern was more egalitarian because mathematics “involve rules of discourse so constraining that the desires and biases of individuals are screened out” (Porter 1995, 74). Furthermore, quantification was aligned with the ideological basis of democracy emerging in Europe a century before. While we may use different words for the number one, its value and meaning remain constant across cultures. This perceived commensurability underpins modern conceptions of equality in democratic societies. For democracy to function, individuals must be understood as commensurate. Each person must count equally, as embodied in the principle of “one person, one vote.” This idea emerged from the egalitarian impulses of the American and French Revolutions, which sought to establish “a society of similar individuals, in direct opposition to aristocratic society” (Walker 2020, 149). Consequently, statistics were conceived of not only as objective, but equalising.

However, statistics have also been used as a mechanism of state power. As Foucault argues, biopolitics marks a transition from disciplinary power, which targets individual bodies, to a form of governance that operates through the management of populations by controlling aspects of life like health and reproduction. By designating groups as populations, the state renders them into commensurate and measurable units, enabling governance through statistical analysis, policy tools, and aggregated decision-making rather than direct coercion<sup>55</sup>. Tsing (2015) illustrates how this commensurability creates dehumanisation in her account of Portuguese imperialism, where these ideas shaped the plantation logics that underpinned the colonial economy. Enslaved people from across Africa were stripped of their familial and social contexts and rendered interchangeable as forced labourers. Through this process, plantations converted individuals with relational ties into commensurable commodities. As Tsing (2015) argues, this transformation was crucial in ensuring that enslaved people lacked the social systems necessary to resist or escape Portuguese control.

55 It is interesting to note here that a similar process was followed in the early development of cybernetics. As we explored in the introduction the information theory of Shannon and Wiener was premised on making words into interchangeable units which maintain their meaning across context. Likewise, making products and labour commensurate is a cornerstone of global capitalist systems. An analysis of the synergies between these various systems, their ideologies and epistemologies are worthy of more exploration but is outside the scope of this chapter and thesis.

Such biopolitical systems of control were used by colonial powers in Southeast Asia. As Noor (2019) argues, British imperialism relied on the creation of categories that rendered colonial subjects interchangeable. For instance, under the East India Company, Governor-General of Bengal Warren Hastings sought to “define what was ‘Indian’ and to create a system of rule that would be congruent with what they thought to be indigenous institutions” (Noor 2019, 40). Similarly, Stamford Raffles employed census data in Java to define and fix a notion of Javanese identity. As Noor (2019) shows, Raffles argued in his 1814 Javanese regulations that to better control the Javanese population, colonial laws and regulations should follow existing laws that people in Java would find familiar. In order to make the claim that his laws achieved this, Raffles positioned himself as ‘knowing’ the Javanese. In fact, Raffles would later claim in his book “The History of Java” from 1817, that “he knew more about Java than any living Englishman” (Noor 2019, 30). In doing so, Raffles attempted to codify Javanese identity so that the Islands population could be made governable via procedures based on that identity (Noor 2019, 64). These efforts, therefore, imposed classificatory regimes under which individuals could be quantified and treated as equivalent units within a larger population. In effect, one Javanese person could be counted and governed in the same way as any other, reducing social complexity to manageable metrics. This abstraction enabled colonial administrators to rule at a distance, without engaging with the specific social ties, identities, or contexts of those they governed (Whittaker 2023).

This is the core tension of statistics, that whilst it can offer a broad overview of a population, it misses the granularity of individuals and their relations leading to dehumanisation (Porter 2020). The inability to render both the specific and the general has produced an epistemic divide “in natural and social sciences, requiring distinct instruments that would render them accessible as well as separate methods and infrastructures of knowledge production” (Aradau and Blanke 2022, 23). This is significant not only because it undermines the claim of objectivity in statistics, but also because it dehumanises those who are made statistics, as the histories of slavery and colonialism attest.

However, the Smart Nation and AI claim to solve this epistemological challenge. Whilst data sets are not necessarily larger than before, what has shifted is the use of AI to make them intelligible. The introduction of algorithmic systems, particularly those associated with Artificial Intelligence, has reconfigured the analytic potential of data itself. Where

once data resembled haystacks in which vital needles might be buried, it is now treated as an endlessly sortable resource, open to partition and reconfiguration in ways that expose patterns across multiple scales. Within the logics of the Smart Nation, the pairing of AI and ubiquitous sensor-driven infrastructure promises to render legible both the general contours of societal behaviour and the fine-grained details of individual action. Consequently, as Aradau and Blanke (2022, 22) note, algorithmic systems generally produce a knowledge regime that claims to move seamlessly between population-level analytics and the intimate details of everyday life.

The Smart Nation paired with AI, therefore, presents an alluring possibility. A way to collect huge amounts of data on a diversity of subjects whilst maintaining the possibility of observing the individual. Through such a system the State can maintain the perceived objectivity that comes with statistical analysis, and its bias free methodological rules, without losing sight of the personal and specific. The Smart Nation with the help of AI therefore claims to offer the possibility of closing the epistemic gap between social and natural sciences. However, what exactly AI is conceived of doing within this system is opaque. To understand the epistemological role of AI within Singaporean governance I now turn to an ethnography of how AI is described as working at AISG events.

## AI Epistemology in Singapore

When AI Singapore (AISG) was founded by the government in 2017, they had two goals in mind. First, to encourage Singaporean businesses to embrace AI and embed the technology into their processes. The second was to train both government officials and the public to use AI technologies which were quickly becoming part of their everyday. Speaking at that sustainable AI event in the summer of 2024 the director of AI innovation, Laurence Liew, stated that in the beginning, AISG focused on one-to-one sessions with small and medium enterprises to understand their needs. What they found, he said, was a desperate need to demystify AI. They wanted to explain what an AI cannot do, what it can, and how those results are achieved.

With support from the government's lifelong learning scheme SkillsFuture, AISG designed two courses, one called AI4E (AI for everyone) and AI for Industry Literacy in AI. These courses were made available for free to the public and made mandatory for all civil servants. Having taken them, permanent Singapore residents may go on to further courses in AI devel-

opment designed by AISG and subsidised by SkillsFuture. Since its launch in 2015, SkillsFuture has been a cornerstone policy of the PAP, with the aim of upskilling citizens to prepare them for the digitised economy of the Smart Nation (Ng 2018, 125). The aim of these sessions is to raise the general understanding of the Singaporean public, and especially its civil servants, on how AI works.

Given AI’s role as interpreter of Smart Nation data, and SkillsFuture’s task of instilling an understanding of how AI works, attending these literacy events offers a window into the ways of knowing espoused by the state through these technologies. So, on May 4<sup>th</sup>, 2023, I became an AI Singapore certified AI for industry user.



Figure 8– AI for Industry certificate

As Laurence Liew said a year later at that sustainability event where we opened this chapter, these training sessions aimed to demystify AI. By the end of the session, pronounced our AI teacher, we would see that AI was just maths. We sat in a room, with space for over one hundred people. One entire wall was glass overlooking the lush NUS campus where AISG is based. Just visible, jutting out of the horizon, was the metropolis of downtown Singapore. The room was at about half capacity, perhaps fifty

middle aged Singaporean's mostly in business suits. Our teacher in suit trousers and a light blue shirt with the top button open began by asking if anyone in the room had *not* used ChatGPT. One woman in a colourful tudung sat in the back row raised her hand, but the instructor breezed on. "We have all used AI, right?" He said, "it's everywhere."

The reason, he argued, that AI was suddenly everywhere was threefold. First, thanks to the Smart Nation, Internet of Things and social media use, there has been a huge increase in the amount of accessible data. Second, the cost of computing had drastically reduced, something supported by the huge number of data centres built in Singapore. Finally, new algorithms, or ways of sorting data were being created every day. Often these new algorithms were freely available as open-source software. "F/OSS has democratised AI!<sup>56</sup>" he concluded.



Figure 9– AI magic T-shirt

I noticed sat a row in front of me, was a man wearing a T-shirt which read "predicting the future isn't magic, it's Artificial Intelligence." As if on cue our teacher turned towards this exact idea. Using the example of Housing Development Board apartment<sup>57</sup> prices he demonstrated how AI can predict the future. The teacher began by showing us a simple

<sup>56</sup> At an F/OSS conference organised in Singapore I met a sociologist who was surveying attitudes among tech professionals about open-source software. They told me that in their experience, programmers in Singapore were keen on F/OSS until they had a viable product, at which point they would lock their code away by making it proprietary.

<sup>57</sup> Known colloquially as HDBs.

scatter graph which charted HDB prices over time. By drawing a line through these points, the instructor said, we could make a rudimentary estimation of HDB prices in the future. This was simple mathematics, he explained and is the basis of AI predictions. However, where the scatter graph had only two parameters, time and price, machine learning AI could have many more parameters. For example, in the case of HDB prices, an algorithm could consider parameters including which floor the apartment is on, the proximity of schools and MRT stations as well as other, less obvious factors.

The question then, is how many parameters were necessary to make accurate predictions. The instructor stated that this was a question more of art than science and was often answered through trial and error. This process of trial and error is often referred to in machine learning as back-propagation. Back propagation is a kind of supervised learning in which an algorithm is given historic data with which to predict a known answer. For example, an algorithm might be given HDB prices from the 1990s and asked. To predict the price of an apartment in the year 2000. The AI engineers know the correct price of the apartment; therefore, they can tell if the AI is getting the right answer. If the AI prediction is incorrect, new parameters are added to the algorithm, and the weighting of those parameters are adjusted. This process is repeated until the AI can accurately predict the right answer.

How many parameters to include in such systems remains an open question. For example, the teacher in our session gave the example of an AI model called Megatron-Turing which has 530 billion parameters. He argued that because AI can consider so many parameters, what it creates is a “representation of the real world.” The more data, and parameters included in its calculation the closer this model comes to reality. He conceded that this process remained mysterious, whilst the data inputs can be controlled, and the outputs observed, what exactly happens in the deep learning of an AI is uncertain – a black box. Despite this, he concluded, we could now see that AI was simply “feeding lots of data to maths.”

Having concluded this demonstration of how AI works, our instructor moved on to the issue of bias and ethics. They began with the premise that “AI is just maths and has no feelings hence cannot be biased.” The AI in their view was neutral, but what caused bias was the data. Garbage in, garbage out, as the famous saying goes. However, bias they argued was also caused by incomplete data sets. To show this they used the

example of showing an AI algorithm photos of a person standing on the moon. The AI will struggle to classify this image because there is not much data of this kind. As a result, bias in AI can be effectively managed by extracting more data, that way the AI model becomes a more accurate representation of reality. Of course, the real world is full of bias, and therefore this could not be the only measure to make AI outcomes fair. To make the process ethical, it was important to ensure that there was either a human in the loop, or a human over the loop. They explained that having a human in the loop meant having a person always running the AI. Whereas human over the loop meant having a person check in on AI outputs to ensure they were fair. They concluded that the more a human is involved, the more ethical but slower. Before we began the quiz which gave us our AI certificates, the instructor reminded us that AI should be explainable, but that this was a challenge because deep learning is a black box. After that, a QR code was put on screen which linked us to a quiz. Ten questions later I was AI certified and ushered off to another buffet.

Of course, this is not the full extent of the training which AI Singapore offers. Following this course, permanent residents can take extended courses which go into more depth. However, these sessions, and the ideas they present are still highly relevant given that they represent what civil servants are expected, at a minimum, to understand about AI, and how AI technologies are presented to the public. With this in mind, there are three ideas presented in this session which I want to unpack further.

### AI's Epistemological Role in the Smart Nation

Throughout the session, the presenters make the claim that reality can be decomposed into parts. We can see this most clearly in their discussion of HDB price prediction. They argue that the future value of a HDB apartment can be broken down into constituent parts, or parameters. In other words, the price of an apartment is composed of factors like what floor it is on, how close it is to a train station and so on. These decomposed data points can be used to make a 'model of reality' from which future prices can be predicted. The logic here is that the whole of a HDB is formed of its constituent data points.

However, this logic is not only applied to housing prices. Another project which was mentioned during the presentation was one in which the likelihood of loan defaults was predicted using social media data. In this project historic social media data, presumably along with other

parameters, was collected to make correlations about what kind of people default on loans. Under this logic, what people will do in the future can be understood by constituent data points just like house prices.

Deleuze referred to this as a process where “individuals become dividuals and masses, samples, data, markets or ‘banks’” (Deleuze 1992, 5). As dividuals, subjects are “comprised of interrelated but independent aspects...distributed across databases” (Iveson and Maalson 2019, 335). Therefore, aspects of a person can be turned into data which can be compared to an aggregate of other people’s data. The correlations produced can then be used to predict the behaviour of other individuals (Aradau and Blanke 2022). People, become a cluster of data points, no more than the sum of their parts and therefore commensurate to one another. As D’ignazio and Klein (2020) argue, a consequence of this process is that data becomes detached from the bodies which produce it. Despite claims that AI can return individuals to big data sets, what we see in this process is that people are simply decomposed further into commensurate units. It is not individuals who are made commensurate to others in a defined population, but instead the data individuals produce.

When people are decomposed into dividuals and then reconstructed as an aggregate citizen, this tends to subordinate the experience of individuals to this constructed data-citizen. For example, in Powell’s (2021) *Undoing Optimization*, she gives just such an example. Residents of a neighbourhood in London noticed that a set of traffic lights were changing too quickly making crossing for pedestrians difficult, especially for elderly and disabled people. When the community reached out to the council, they were told that data from traffic light sensors showed that pedestrians had enough time to cross. By reducing the citizens to a cluster of data-points, the experience of individuals at the crossing could be excluded as not representative. Zandbergen (2020) refers to this as anti-politics<sup>58</sup>, where citizen centric projects end up excluding the voices of citizens by representing them in the form of data rather than engaging with them as individuals. This is an example of what Haraway (1988) calls the God Trick in which data offers a perspective from everywhere, and as a consequence creates a view from nowhere. In this case, AI produces the perspective of all citizens as an aggregate, and as a result, no

58 Further, Zandbergen’s use of anti-politics is similar to Ferguson’s (1990) “anti-politics machine” in that Smart City projects which fail can be re-framed as successes for what they can teach us about the next project. Something mirrored in the AI space where failed projects only make way for future success. However, Zandbergen does not make this connection.

one person in particular. Returning to the example of loan defaults, the likelihood of someone defaulting on their loan was not compared to the profile of individuals who had defaulted, but on an aggregate data of all people who defaulted on their loan.

However, it is not only citizens who are potentially alienated by the political process of AI governance. Returning to the example of the HDB prices, the instructor described the process which AI is undertaking as a complicated scatter graph. Where a scatter graph has only two possible parameters, a machine learning algorithm has no such limits, like Megatron-Turing which has hundreds of billions. Nick Seaver (2021) compares this to multidimensional scaling, an anthropological method in which participants sort cultural ideas. The more often participants put terms together the more conceptually similar they are considered. They are then plotted onto a graph showing the relationship between them. However, “Where MDS plots were typically limited to the two or three dimensions that humans can readily see as space, machine learning has no such limits, and its dimensions can proliferate without end, responding to whatever patterns may appear in the data” (Seaver 2021, 55). The issue, Seaver points out, is that once this goes beyond three dimensions, we can no longer clearly understand the relationship between the data points on the graph, because we cannot imagine a four-dimensional space, let alone one with hundreds or even billions of dimensions.

This, in part, helps to explain why such systems are black boxes, as was reflected in the session. The AI is simply considering way more parameters than AI engineers can comprehend. Everything up until this point is explained as simple – data is extracted, it is plotted against one another and then results are produced – but it feels as though there is a step missing in this explanation. That is because there is. As Aradau and Blanke argue, “it becomes unclear how and where decisions emerge from small steps in the human-machine workflows. By appearing to work in banal and highly segmented ways, algorithmic decision making creates the impression of simultaneously doing less and more than we might anticipate that it could do” (Aradau and Blanke 2022, 65). What happens in the deep learning phase of algorithmic reasoning is and will most likely remain a mystery.

Further, there is a more philosophical issue at play. In their book, algorithmic reason, Aradau and Blanke (2022) compare approving AI decisions to dropping a nuclear bomb. When dropping a bomb, the actual act

of pushing a single button is disassociated from both the huge processes and systems which create that bomb, and from the devastation which the bomb causes. They argue that “it is not just the fragmentation of work that ultimately impedes the comprehension of the product of one’s labour, but equally the magnitude of what humans can produce” (Aradau and Blanke 2022, 48). As we have seen, the magnitude of a machine learning algorithm is beyond the user’s comprehension, but also, they are alienated from the results of that algorithm. Rather than following rules that eliminate bias, as statistical methodologies have been argued to do, in AI systems operators lose sight of the process entirely. This shifts their role from being engaged in the process of creating knowledge to overseeing outputs and adjusting for bias.

The epistemology of AI within the Smart Nation project therefore has two effects. First, people are reduced from individuals to dividuals, becoming merely a cluster of datapoints which can be decomposed and recomposed in order to predict their behaviour, and the behaviour of others. This could further reduce their civic and political role to that of providing their data to the Smart Nation. As the session instructor argued, bias is the result of incomplete data sets, therefore, to make yourself legible to the state, it is the duty of citizens to provide more of their data. In this way, they can be incorporated accurately into the AIs model of ‘reality’. Cardullo (2021), goes even further than Zandbergen, calling this post-politics in which consequential governance decisions which affect people’s daily lives are turned over to technological systems that have little or no engagement with citizens. Second, the role of engineers, and government bureaucrats is also reduced. As was explained during the training session, the computer scientists building AI systems are only able to adjust inputs. Meanwhile, the role of bureaucrats is merely to oversee outputs as the human over the loop. In both cases, people are excluded from the decision-making process which happens during the black box deep-learning process.

As Ho argues, in Singapore “Participation in the Smart Nation is restricted to computational tinkering and tweaks that seek to improve efficiencies according to economic and technical rationality” (Ho 2017, 3112). Consequently, deeply embedded social challenges become the subject of technical tinkering. Cardullo concludes that the Smart Nation, and its post politics are a project of neoliberalisation which “works towards boasting a policy rationality” (Cardullo, 2020, 8). As Cardullo (2021) further argues, the Smart City is aligned with neoliberal ideas in that it

relies “on datasets and forecasts [that] sustain the economic rationality of efficiency, performance, and quantitative deliverables proper of neoliberal economics” (Cardullo 2021, 17). Further, as Aradau and Blanke argue, the logics behind the Smart City “aim to datafy the world and make it algorithmically acceptable: institutions, subjects, experiences, relations, everything become ready for algorithms” (Aradau and Blanke 2022, 208). This project, of making things “ready” for the algorithm is also one which makes the world and its complexities align with neoliberal market logics by making the unruly parts of society legible. By doing so, AI outputs are appealing to states which are already invested in these neoliberal ideals.

The ties between the Smart Nation and Neoliberalism are important because the idea of the Smart City did not emerge from nowhere. They have a potent appeal as utopian, and yet not idealistic, because these utopias are governed by market logics. This idea of a realistic utopia has made the Smart City “one of the winning discursive metaphors for the way contemporary society organises and understands itself” (Cardullo 2021, 16). These ideas are successful, because they offer a utopia whilst simultaneously conforming to ideas of rational governance which preceded it. In what follows, I want to show how the Smart Nation, with the help of AI, is aligned with the dominant neoliberal governing ideology of the People’s Action Party who have ruled in Singapore since 1959.

### Why Does This Fit with the ‘Ideology’ of Singapore?

Since 1959, the People’s Action Party (PAP) has ruled Singapore. In its early days, the party relied on the support of communist members, and their ideology, to gain the support of the working public. However, after 1965 and the split with Malaysia, the party shifted away from its communist roots. Instead, the party claimed to take a pragmatic approach, choosing to deal with policy issues as they arose, rather than approaching them with a predetermined plan or ideology (Chua 1995, 1). However, some have argued that whilst the PAP continue to claim their approach is non-ideological, its approach in fact fits a neoliberal approach to governance with market rationalism as its ideology (Chua 1995, Mauzy & Milne, 2002 and Abdullah 2021).

This neoliberal pragmatism is intensified by the ideology of survivalism, in which the economic prosperity of Singapore is prioritised above all else (Hong and Huang 2008, 1). These ideas are particularly influenced by the anxiety that Singapore is a small nation without natural resources

which is surrounded by much larger neighbours who may, at any time, invade Singapore. This fear of invasion is also in part motivated by the split with Malaysia in 1965. This split is frequently blamed on racial riots which erupted in Singapore during the 1950s and 60s. Riots which are often blamed on the Malay Muslim population, and agent provocateurs from Malaysia and Indonesia. As a result, the split with Malaysia and racial discord have become the “primordial fault lines” (Hong and Huang 2008, 22) in the Singaporean State’s anxieties about survival.

This has directly resulted in two related ideologies, one of communitarianism, and the other of racial harmony. Having gained independence, Singapore needed to construct a national identity. However, the PAP argued that the nation was formed predominantly of citizens with a migration background. Therefore, the PAP emphasised a communitarian identity which placed the success of the nation, ahead of personal, community or ethnic loyalties. To enforce this communitarian identity, the state “reminded Singaporeans of the tumultuous past that was wrought with racial riots, and the need for social cohesion and racial harmony to ensure economic survivalism through a continued stream of foreign investment.” (Lim, Yan, Leong, and Hong 2014). This focus on foreign investment was also central to the post-colonial state.

This post-colonial Singaporean ideology was tied directly to neoliberalism. As Meng argues the Singaporean economic model has “emphasised free trade” (Meng 2015, 123). This was only further entrenched in the 1990s when the state further liberalised its markets to entice foreign investors and compete with economic booms in Hong Kong and Japan (Meng 2015). However, this neoliberal approach was not contained to economic policy. Taking their pragmatic approach to governance, the PAP transformed all policy problems into issues which “can be managed by applying ‘rational’ utilitarian calculations” (Ng 2018, 119). Given its survivalist, and pragmatic approach, neoliberalism fit easily with Singaporean post-colonial governance. These principles served to render “all government decisions...[as] ‘technical’ problems to be solved only by experts...the electorate as lay individuals do not possess the requisite knowledge to be trusted” (Chua 1995, 204). As Chua (1995) has argued, this approach left citizens with a question – do you think you know better than the government? The economic success of Singapore further bolstered this argument.

The combination of these principles created a unique governing logic in the Singaporean state. As we have seen, even social justice principles such as racial harmony have been rationalised according to market logics. As such Singapore is “distinct among post-colonial societies in its valorisation of the colonial past as part of the telos of progress and freedom” (Wee 2007, 4). This is particularly evident in the state’s handling of Stamford Raffles, a British colonial officer who ruled the island in the early 19th century. Unlike, in many post-colonial states where national myths distanced themselves from colonial rulers “the PAP government recognised Stamford Raffles as the country’s founder. A move taken consciously also to convince the British and other potential investors that the country was wooing that there was no fear of the government adopting nationalist policies that would be inimical to their economic interests” (Hong and Huang 2008, 5). To this day a statue of Raffles stands with his back to the city’s Central Business District, linking the country’s present economic success with its colonial past.

Understanding the ideology of the PAP helps to explain why the Smart Nation, and its twin concept AI, have come to be seen as inevitable in Singapore. Despite its claims to the contrary, the PAP does have a political ideology. As I demonstrate here, the claims of pragmatism are in themselves part of a broader policy of neoliberal reform that the country has followed since its full independence in 1965. This approach has been extraordinarily successful for the PAP, who have maintained power throughout the country’s history and ensured economic success. Part of this success is down to the ideologies of survivalism and communitarianism, which call for citizens to put the state first, and challenge Singaporeans to think if they know better (Mauzy and Milne 2012). This has allowed the PAP to maintain its position as the political hegemon, despite its technocratic and authoritarian approach which often excludes the voices of citizens. However, as Ng (2018) points out “part of its [the PAPs] resilience is a corollary of the adaptive capacity of neoliberal ideology and practice to fit specific socio-cultural contexts” (Ng, 2018, 136). It is against the backdrop of these political ideologies that the Smart Nation entered the Singaporean political scene in 2014. In what follows I explore how the Smart Nation fits neatly into the governing logics of Singapore.

## Smart Nation and Singaporean Government Ideology

To understand how the Smart Nation reflects the neoliberal ideals of the Singapore state, I will next look at two documents. The first is a speech from then Prime Minister Lee Hsien Loong at the launch of the Smart Nation initiative in 2014. The second is the Digital Government Blueprint from 2020. These two documents mark the start of Singapore's embrace of the Smart Nation, both ideologically and as policy. In what follows, I will show how these two documents replicate and reconfigure the governance ideals of survivalism, pragmatism, and communitarianism for a digital age.

One month after the split with Malaysia, Lee Kuan Yew, the first Prime Minister of Singapore, made a speech in which he laid out his vision for the future of Singapore. In it, he famously concluded: "Over a hundred years ago this was a mud flat swamp. Today this is a modern city. Ten years from now this will be a metropolis. Never fear." Here, Lee invokes a paternalistic developmentalist model where the state assumes total responsibility for national progress. His assured tone reveals the ideological core of post-independence governance, citizens need not worry, as the state would act decisively and rationally in their collective interest. This narrative of linear progress and state-led transformation recurs in the launch of the Smart Nation. At the close of his speech, Lee Hsien Loong links his premiership to that of his father, echoing the same rhetorical cadence: "50 years ago, we built a modern city. Today, we have a metropolis. 10 years from now, let's have a Smart Nation!" The Smart Nation, then, is not positioned as rupture, but as a continuation—another stage in Singapore's technocratic ascent. It is, in this sense, a rearticulation of survivalism, the imperative to remain economically competitive through state-led innovation.

Yet the successful realisation of this future depends not only on state leadership but also on the active participation of citizens. As Loong states, becoming Smart will benefit the whole nation, but only "if we get everybody active, engaged, excited, wanting to make this happen." This emphasis on collective responsibility echoes the communitarianism of the PAP's post-independence ideology. However, where the older communitarianism was predicated on discipline and conformity in the service of national development, the Smart Nation calls for a new kind of civic participation: one where citizens function as data-generating, self-optimising subjects.

This expectation is exemplified in Loong's anecdote about Smart electricity meters. He imagines a scenario where a citizen forgets to switch off their lights and air-conditioning:

"You are rushing, and, in your rush, you forgot to turn off your lights and your air-conditioner. In the old days, you either run all the way home or wait till the end of the day and kilowatt hours are burnt and money spent...today you should be able to get your iPhone, connect to your home and find out what the status is and if your air-conditioning is on, turn it off, and if your lights are on, turn them off. Save energy, save bills, save anxiety."

Here, the citizen is imagined not just as a user of infrastructure but as an efficient, self-monitoring actor responsible for environmental sustainability and energy savings. As Ho (2017) notes, such technologies are not neutral; they operate as tools of governance that encourage Singaporeans to adopt rational, data-driven behaviours. In doing so, they produce what Ng (2018, 126) calls "a normative set of values and attitudes amenable to the state's developmental strategy." The citizen becomes a calculative subject, responsible, data-literate, and optimising. This is the perpetuation of communitarianism, in which civic duty is fulfilled through data-sharing and behavioural rationality.

This transformation is mirrored in the way the state reimagines itself. The Digital Government Blueprint and Loong's speech both exhort public servants to behave more like Silicon Valley entrepreneurs. While in the 1990s and early 2000s the Singaporean state was often described as operating like a financial institution, efficient, risk-averse, and globally oriented, it is now encouraged to adopt a start-up mentality: agile, disruptive, and experimental. In 2024, the Singapore Economic Development Board released a report proclaiming Singapore as the next Silicon Valley due to its dynamic tech start-up ecosystem (EDB 2024). Yet this entrepreneurial ethos is also extended to the public sector. In his speech, Loong acknowledges that "it cannot quite be like a Silicon Valley company because it is not just a start up...but [the government] must also push the envelope, using technology to seek new applications, to find new approaches to existing problems." Similarly, the Digital Blueprint instructs civil servants to "think big, start small and act fast" (IMDA 2020, 15), a phrase that closely echoes Facebook's infamous motto, "move fast and break things."

What presents itself as a new kind of governance, in fact, perpetuates Singapore's longstanding survivalist ethos. The logic remains the same, in order to preserve the nation's competitive edge, the state must constantly adapt. Whether by opening markets in the 1980s, or embracing disruption today, the goal is the same, to ensure "labour market flexibility in an effort to supposedly optimise conditions for economic development and dynamism" (Ng 2018, 122). This imperative, to innovate or perish, is survivalism, dressed in the language of start-up culture and digital transformation. This transformation from citizen to neoliberal subject, and civil servant to entrepreneur is further emphasised by the language of the Digital Blueprint which throughout refers to citizen engagement with the state as 'transactions.' This language is a demonstration of how citizens have become customers of the state, and in turn how the state has become a business.

More subtly, Smart Nation policies reconfigure the epistemology of governance itself. Postcolonial Singapore has long embraced pragmatism, where social issues are approached as technical problems to be solved through rational planning. In the Smart Nation, this ethos is intensified. Loong argues that progress depends on the state's ability to "identify issues, prototype ideas, deploy them effectively to benefit the whole nation." Likewise, the Digital Blueprint claims that "digitalisation helps us to serve with greater empathy by enabling personalised and seamless experiences for different groups of stakeholders" (IMDA 2020, 3). These statements reflect what Zandbergen (2020) describes as "seamless smartness," where digital technologies promise to render difference and complexity legible through data.

In this vision, data becomes a kind of universal solvent, able to dissolve political contestation and produce objective policy. The more data that is collected, the more accurate, efficient, and empathetic governance becomes. Whether the issue is sustainability, mobility, or social cohesion, the Smart Nation promises that the right algorithm can produce the right solution. This is a rearticulation of pragmatism, a belief that policy can be both responsive and rationalised, personalised yet scalable, if only enough data is gathered.

Throughout Loong's speech, technology is presented as integral not only to government but to everyday life. The Smart Nation, he claims, will address everything from macroeconomic growth to interpersonal relationships, "Some lament that we spend too much time on Facebook and

Twitter and Instagram, and we need more face-to-face, and we have an app for that also.” The state’s role here is no longer merely to regulate, but to provide platforms for optimised living. Similarly, the Digital Blueprint promises to “drive broader efforts to build a digital economy and digital society, in support of Smart Nation” (IMDA 2020, 2). What emerges is a vision in which digitalisation is not one strategy among others, but the medium through which all strategies are pursued.

In this way, the Smart Nation project is not a break with the past but a regurgitation of it. It is a continuation of Singapore’s post-independence ideological commitments, communitarianism, survivalism, and pragmatism, filtered through the logic of data and the aesthetics of Silicon Valley. Under this new wave of neoliberalism, citizens are asked to become Smart citizens, rational, data-producing actors who help optimise the nation’s future. This is the new communitarianism. The state, in turn, becomes a disruptive innovator tasked with maintaining Singapore’s competitive edge. This is the new economic survivalism. And all of this is governed by the epistemology of data as able to resolve complexity across scales. This is the new pragmatism. The Smart Nation appeals so strongly in Singapore precisely because it regurgitates the ideological foundations of its past, offering a familiar promise, that through state-led innovation and disciplined participation, the nation will continue not just to survive but to thrive.

## CONCLUSION – WHY DOES THIS MATTER FOR THE THESIS?

Statistics have long been perceived as a governance tool that produced equality. Its early advocates tied the use of statistics to their democratic values, if everyone is equal then everyone should be counted. Statistics was also perceived as objective because the rigorous methodology of its collection made it more resilient to personal interest and bias. However, this ability to turn unruly individuals into legible interchangeable units also made statistics a useful tool for governing at a distance as it was on plantations, and in colonies. Consequently, despite the claims of equality, statistics have frequently been used to dehumanise and control.

In the big data era, similar claims are made about the abilities of statistics to induce equality. Systems like the Smart Nation are able to collect more data, and in more granular detail than any other data extraction

in history. In fact, more data than any person or for that matter group of people could analyse. As a consequence, AI plays the role of making this data meaningful by sorting it into groups and finding novel correlations. The claim therefore shifts, it is not that people can be counted as interchangeable units, but that the data which makes up a person can be extrapolated to make an aggregate citizen. For the first time, data can seemingly operate at all levels, able to forecast large scale societal trends, but also able to be used to predict individual behaviours. This reduces people to less than the sum of their parts and this falls into the trap Haraway calls a God trick – the data ends up representing an average person, and not any person in particular.

This epistemology can be seen in action at AISG training sessions. At these events, representatives of the State-Owned Enterprise (SOE) argue that with enough data they can create a model of reality, upon which accurate future predictions can be made. They use the example of apartment prices – with enough data points considered we can predict the cost of any apartment. However, this is not just used to predict broad trends like housing prices, but also, as they described, to predict whether individuals would default on their loans. Here we can see how the same epistemology can move smoothly across scale. However, the session also demonstrated another difference between statistics in the past and the big data era. Where statistics claims objectivity on the basis of a rigorous process, it is in the AI process where what exactly happens with the Smart Nation data is lost. Human involvement is reduced at this stage to controlling what data goes in and checking in on whether the outputs are biased.

This creates what Zandbergen (2020) calls anti-politics where the role of people is reduced because they are perceived to be represented by the data. This is twofold, not only are citizens excluded as their perspective is datafied, but also civil servants are reduced to tinkering with the inputs and outputs of the system rather than actively engaging in policymaking. Cardullo (2021) goes further calling this post-politics, the inevitable outcome of neo liberalisation in which all policy is made to fit market logics. Under this system, citizens are assumed to be rational actors, and AI reveals their innate rationalities, rendering their actions predictable. The city in all its unruliness is made computable, predictable, and amenable to being governed by neoliberal ideals.

These are not new ideals in Singapore. After the separation from Malaysia in 1965 the PAP emphasised a policy of pragmatism. They claimed not to be ideological but instead policy followed the objective, pragmatic choice. However, it is clear that this policy was in itself an ideology in which pragmatism was tied to economic interests and, as a result, liberalising their economic markets. This position was justified by the idea of survivalism, that to survive and compete as a small country, Singapore needed to focus on economic success. Over time, this neoliberalising logic went beyond the economic and into all government policies. Despite the fact that these policies tended to exclude Singaporean citizens, the concept of communitarianism challenged them to consider if they knew better than the government.

In many ways, the Smart Nation and AI follow these ideological antecedents. Once again citizens are asked to sacrifice for the good of the country, this time it was to give up their privacy in order for the government to have the data needed to support its algorithmic governance systems. Once again, their voices were excluded, this time in favour of data which stood in as their replacement. At the same time, the government transformed itself to represent economic forces, this time in the form of tech companies and the ideals of disruption. All of this is justified on the basis of statistical objectivity, that by using statistics to govern, they claim to be certain not only of the right outcome, but the right outcome for everyone involved.

It might be reasonably asked what all this has to do with the governance of Singapore's Muslim community. In this chapter I have treated the Singaporean State as a monolith. This was not by accident; in this section I wanted to explore what ideology the state put forward about the role of AI within its governance strategy. What is presented is a smooth form of governance. With enough data, they argue, everything can be predicted, and therefore the government will be able to formulate policy which applies to all people at all scales. This is the ideological frame through which governance is managed in Singapore. Included within this is religious governance, which is managed by the religious authority MUIS (Majlis Ugama Islam Singapura). MUIS as a part of the government is encouraged to govern using AI systems and data. For example, the Digital Blueprint states that every government office will have an AI project, and that 90–100% of major government data will be made machine readable by 2023. This includes MUIS. AI systems are the ideological frame through which governance is done in Singapore. Whilst this chapter has

focused on the smooth ideology, in the next I want to explore what happens when that smooth algorithmic governance comes into contact with the messy realities of community. Neoliberal ideology, and its newest proxy AI, is the box through which the state including MUIS must imagine the future. In the following chapter I explore how MUIS aligns itself with the demands of this box.

## THE FUTURE, AN INTERLUDE: PART 1, EPISTEME

How do these state-defined epistemology of AI, described in the preceding chapter, change the way Futures are imagined in Singapore? As we have seen, ideas of the Smart Nation and the AI, which interprets the collected data, are hugely politically influential in Singapore. They have this power in part because they replicate the political ideologies of the past. What is new is how the Smart Nation and AI shift the power of expertise in Singapore. Whilst it had been the political class who had the expertise to make 'pragmatic' decisions, AI makes these political relations even more asymmetrical. Only those with access to the data, and the skill to build AI are now in a position to make authoritative policy decisions. Despite claims to the contrary, that AI is democratised, collecting, and analysing data on this scale requires not only expertise but huge amounts of computing and infrastructure. This creates a hierarchy of knowledge and expertise. Those with access, namely the state, have the ability to predict the future. The role of citizens is merely to provide data to this end.

However, whilst the Singaporean state has for some time already asserted themselves at the head of a hierarchy of knowledge, their role is also diminished next to the reified Smart Nation. As demonstrated in the preceding section, AI engineers are reduced to tinkering with data inputs, whilst politicians and civil servants preside over the proclamations of AI. As a consequence, AI ascends above these other groups within the hierarchy of knowledge production. Though neither party, engineer nor politician, has full control over the process. This produces a foreclosed future (Bear 2016) in which the future is defined by AI and its supposedly objective outputs.

AI is clearly a key organising logic within the Singaporean state. Laura Bear calls such logics episteme of future, ways of knowing which shape how the future is imagined. As Bear argues, these "Epistemes are associated with hierarchies of expertise and political relations...They create foreclosed, abandoned, and unrealizable futures" (Bear 2016 496). By foreclosed, Bear means that certain narratives have so much cultural weight, that alternative futures become unimaginable. We can see these kinds of foreclosed futures at play in the sustainable AI conference which I described at the start of the chapter. The imperative to use AI was so strongly believed, that the idea of not using the technology, or even reducing usage, became unthinkable, even laughable.

Returning to that AI and sustainability event, why did everyone laugh? The argument that Singapore should attempt to reduce its use of data centres to preserve the environment was seen as illogical because it did not protect the expansion of Singapore's economy. As we saw this is a key imperative of the Singaporean government's policy approach, economic survival is central to decision making. The solution, therefore, to the environmental damage wrought by AI needed to be one which simultaneously protected the growth of the Singaporean economy. However, I think the answer runs perhaps deeper and is connected to the epistemology of AI.

This deeper logic becomes visible when we examine how AI systems are understood to function, especially their probabilistic basis. As described in the introduction to this thesis, AI does not create objective answers, merely answers that are good enough based on the available data, therefore, the 'right' answer is just a little more data away. The epistemology of AI, as presented by the Singaporean state via AISG is that if we can provide enough data those objective answers can be reached. Meanwhile, AI systems are predicated on probabilities which operate on the assumption of more data in the future. As a result, the logic of AI is both the source of the problem, and the sight of the solution.

At another AI and sustainability event I attended, the speaker presented on how AI could be used to improve the sustainability of farming practices. By analysing the grazing patterns of goat herds, he argued, we could produce patterns by which shepherds could move their goats more efficiently. By doing so, more of the grasslands could be preserved by allowing areas more time to re-grow. I asked during the Q&A whether these efficiency gains would outweigh the energy requirements of AI systems. The speaker responded, fairly enough, that this would be hard to measure. However, he concluded, AI would likely also solve this problem. When I asked how, he told me that AI would help to find renewable energy solutions in the future.

This moment, and the laughing at the AISG sustainability event, reminded me of Prime Minister Loong's speech where he described an app which would help reduce the problem of excessive screen time. The solution here loops back through the problem, creating a never-ending spiral. Likewise, as explored in the previous chapter, statistics struggle to represent individuals. AI is again the solution by helping to parse the mountains of data produced by the Smart Nation. The solution, therefore,

is ever more granular statistics. As they described at the AISG event, AI tends to be biased against things not well represented in the data set. The solution? More data. And on and on.

The laughing at the AI Singapore event was because any future without AI has become unthinkable. Furthermore, how we reach that future is through AI, yet this is a foreclosed future because it creates an infinite loop. However, it is important to remember that no future is fixed. As Brown, Rappert and Webster (2000) argue the future is contingent, but it is also open to change at any time, studying futures they argue requires a careful balance between these two perspectives. It is important to remember that other immutable conceptions of future have come and gone. To quote Ursula K. Le Guin “We live in capitalism. Its power seems inescapable. So did the divine right of kings” (Le Guin 2020<sup>59</sup>). Bear agrees, arguing that even the strongest foreclosed futures can be resisted simply by proposing alternative imaginings and epistemologies. This is something I will return to in chapters five and six, but for now, we turn to MUIS and how they respond to the foreclosures of AI as intermediaries of the state.

59 Le Guin (2019) Full Speech: Ursula K. Le Guin’s Passionate Defense of Art over Profits [10:13–10:23]. Accessed: 6 November 2025.