

# The Big Nine - Amy Webb

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**Abstract:** *Amy Webb is a quantitative futurist and founder of the Future Today Institute, a leading foresight and strategy firm that helps leaders and their organizations prepare for complex futures. She is a professor of strategic foresight at the NYU Stern School of Institute, a Visiting Fellow at Oxford University's Säid School of Business, a Nonresident Senior Fellow in the Atlantic Council's GeoTech Center, a Fellow in the United States-Japan Leadership Program, and a Foresight Fellow in the US Government Accountability Office Center for Strategic Foresight. She was elected a life member to the Council on Foreign Relations. She is the author of several popular books, including The Big Nine: How the Tech Titans and Their Thinking Machines Could Warp Humanity. A call-to-arms about the broken nature of artificial intelligence, and the powerful corporations that are turning the human-machine relationship on its head. We like to think that we are in control of the future of "artificial" intelligence. The reality, though, is that we -- the everyday people whose data powers AI -- aren't actually in control of anything. When, for example, we speak with Alexa, we contribute that data to a system we can't see and have no input into -- one largely free from regulation or oversight. The big nine corporations -- Amazon, Google, Face book, Ten cent, Baidu, Alibaba, Microsoft, IBM and Apple--are the new gods of AI and are short-changing our futures to reap immediate financial gain. In this book, Amy Webb reveals the pervasive, invisible ways in which the foundations of AI -- the people working on the system, their motivations, the technology itself -- is broken. Within our lifetimes, AI will, by design, begin to behave unpredictably, thinking and acting in ways which defy human logic. The big nine corporations may be inadvertently building and enabling vast arrays of intelligent systems that don't share our motivations, desires, or hopes for the future of humanity. Much more than a passionate, human-centered call-to-arms, this book delivers a strategy for changing course, and provides a path for liberating us from algorithmic decision-makers and powerful corporations.*

**Keywords:** Quantitative, The Big Nine, Amy Webb, Future, Institute

## I. INTRODUCTION

‘Human brains are bad at assessing risk and peril,’ points out Amy Webb in her by turns fascinating and alarming piece of (mostly) non-fiction, *The Big Nine: How the Tech Titans and Their Thinking Machines Could Warp Humanity*. The point she is making is that “we assume common activities are safer than novel or uncommon activities”. This explains why we fail to think driving is a dangerous activity (chance of dying in a car crash: 1 in 114), while many are terrified of flying (chance of dying in an air accident: 1 in 9,821). It also explains, pertinently for a book about the rise of artificial intelligence, why “we’re similarly bad at assessing the risk of AI because we mindlessly use it every single day as we like and share stories, send emails and texts, speak to machines and allow ourselves to be nudged”.

Artificial intelligence is already so deeply embedded in our lives that we don’t notice it. As Webb says, the “killer robots” fear that humans have about AI is way off the mark. Far more likely, she says, is that the detrimental effect of AI in future will be cumulative: we are in for “paper cuts” — everyday hurts, small setbacks, that add up over time. These “paper cuts” can happen when AI algorithms take over from human decision-making. The flight boarding protocols used by most airlines, for example, are driven by algorithms, and usually it goes smoothly. But in April 2017, United Airlines staff on an overbooked plane from Chicago had failed to attract any takers for an \$800 payment to take another flight. The algorithm suggested whom to remove. In this case, Webb says, “human staff had ceded authority to an AI system that was designed by relatively few individuals who probably hadn’t thought enough about the future scenarios in which it would be used”. The resulting footage of David Dao being dragged off the plane went viral. “What

everyone wanted to know: How could something like this happen in the United States?" The answer is: quite easily. The AI we get now (the future is a different matter) is a result of the choices and biases of the people who develop it. We have known this since 1968, when a US computer programmer and school teacher called Melvin Conway observed that "systems tend to reflect the people and values who designed them". Conway's law is important in AI, and Webb, a professor of strategic foresight at New York University's Stern School of Business, offers up many examples. "If you — or someone whose gender, race, language, religion, politics and culture mirror your own — are not in the room where it happens, you can bet that whatever gets built won't reflect who you are."

Webb knows how to change things — get a more diverse group of people working in this field. But at the elite university level, where AI "tribes" form — many go on to work at the tech giants she describes elsewhere in the book — there is a dearth of women and people from ethnic minorities. In the US, women receive 18 per cent of undergraduate degrees in computer science, down from 37 per cent in 1985. However upsetting, and potentially life-diminishing, the effects of current AI, Webb's visions for the future are worse. We have failed to make sure that AI is treated as a "public good", rather than just a digital platform built by commercial giants. Leaving development of AI to big tech companies, with little to no governmental or regulatory oversight, has already been a colossal mistake. Unlike China (about which Webb has terrifying things to say), the US has never co-ordinated policies or pushed funding into universities, which she says is a total lack of planning and foresight.

The overarching theme of Webb's argument is a giant one: that the huge companies in the US and China — The Big Nine of the title— have an unassailable lead in introducing AI into our lives and that is going to have a profound impact in ways we cannot yet imagine. There is a geopolitical angle: in China the three giant companies—Baidu, Alibaba and Tencent— are closely tied to the government, and AI is a key part of the country's wider plans for dominance in the global economy. It already has a social credit score programme, which ranks and rates citizens on their behaviour, with real-world outcomes such as being able to travel, or not, and deciding which school children attend.

In the US, because the government has abdicated responsibility for developing AI as a social good, the free market has taken over, leaving ethical and legal decisions to the companies she calls the G-Mafia: Google, Microsoft, Amazon, Facebook, IBM and Apple. Webb outlines three possible future scenarios for a world living with the "learned helplessness" of a G-Mafia-powered life where we are nudged to make the "right" choices in terms of eating, exercise and other habits through our smart devices, while creating a constant stream of personal data that will affect, for example, how much we pay for health insurance. Even the most optimistic scenario is influenced by a coming change: "While we argue that future generations are likely to be dumber because of technology, we never consider that we humans might someday find ourselves dumber than technology. It's an inflection point we are nearing and it has to do with our respective evolutionary limitations." Once AI becomes ASI (artificial superintelligence) it will, Webb says, be "impossible to imagine the consequences for our civilisation".

The most dystopian version of the future involves a Chinese global empire built "on the foundation of data" and which might include a southern US border wall with Mexico, built by the Chinese to isolate Americans who do not have social credit scores, so cannot travel freely. Webb's book at times reads like a thriller in which the ending looks bleak. But she affords us a clear, jargon-free view of the power and potential of AI— and how we as citizens should seek to influence its development— before a coming superintelligence shapes human lives in ways we cannot yet imagine.

## II. REVIEW

"The Big Nine is an important and intellectually crisp work that illuminates the promise and peril of AI. Will AI serve its three current American masters in Washington, Silicon Valley and Wall Street or will it serve the interests of the broader public? Will it concentrate or disperse economic and geopolitical power? We can thank Amy Webb for helping us understand the questions and how to arrive at answers that will better serve humanity than our current path. The Big Nine should be discussed in classrooms and boardrooms around the world."--Alec Ross, author of The Industries of the Future

"The Big Nine is provocative, readable, and relatable. Amy Webb demonstrates her extensive knowledge of the science driving AI and the geopolitical tensions that could result between the US and China in particular. She offers deep insights into how AI could reshape our economies and the current world order, and she details a plan to help humanity chart a better course."--Anja Manuel, Stanford University, cofounder and partner RiceHadleyGates

"The Big Nine makes bold predictions regarding the future of AI. But unlike many other prognosticators, Webb sets sensationalism aside in favor of careful arguments, deep historical context, and a frightening degree of plausibility."-- Jonathan Zittrain, George Bemis Professor of International Law and professor of Computer Science, Harvard University

"The Big Nine is thoughtful and provocative, taking the long view and most of all raising the right issues around AI and providing a road map for an optimistic future with AI."--Peter Schwartz, senior vice president, Salesforce.com, and author of The Art of the Long View

"Amy Webb, with insight and a big dose of pragmatism, shows how to clearly see the next big disruption and then take action before it strikes."

-Ram Charan, advisor to CEOs and corporate Boards, author of The Attacker's Advantage and co-author of Execution: The Discipline of Getting Things Done

"Instead of predicting the future, Webb lays out scenarios for optimistic, pragmatic, and catastrophic outcomes -- all extrapolated from current facts. However impractical you may find the idea of a common Apple-Amazon operating system named Applezon, considering potential scenarios is a fantastically healthy exercise, because anyone who tells you they know how AI is going to turn out is lying."--**Venture Beat**

"Rather than questioning the character of thinking machines, futurist Amy Webb turns a critical eye on the humans behind the computers. With AI's development overwhelmingly driven by nine tech powerhouses, she asks: Is it possible for the technology to serve the best interests of everyone?"--**Wired**

"Sitting somewhere between Nate Silver and The Tipping Point, Amy Webb's book provides a practical guide for leaders - at any level - in the age of Big Data, offering tools for picking out the 'true signal, a pattern that will coalesce into a trend with the potential to change everything' - and land on the right side of disruption."--Jon Foro, The Amazon Book Review (**An Amazon Best Book of December 2016**)

"The clear, insightful, and humorous Amy Webb has crafted a rare treasure: a substantive guide written in a narrative that's a delight to read. While most futurologists want guru status through a few Nostradamus-like visions that never materialize, Webb modestly reports with depth and discipline, and creates a system and tools we can all use to better navigate the future. Through her deep research, specific anecdotes and brilliant insights, she has performed the selfless but hugely valuable act of teaching us all to fish at the fringe."--**Christopher J. Graves, Global Chair, Ogilvy Public Relations**

"We need to get Amy Webb to campus. This is one of those cases where organizing discussions of the book would be great - but not enough. We would be wise to engage with Webb directly... We need more books like The Big Nine that are critical of higher education for reasons beyond politics (liberal bias) or costs... The Big Nine is an essential book for anyone interested in a global perspective around the role of companies and governmental policies in determining technological change."--**InsideHigherEd**

"Webb is a first-rate storyteller...she has poured a lifetime of researching, writing, and conversing--in a word, thinking--into her masterwork."--**Law.com**

"Webb's assessments are based on analyses of patent filings, policy briefings, interviews and other sources. She paints vivid pictures of how AI could benefit the average person, via precision medicine or smarter dating apps...Her forecasts are provocative and unsettlingly plausible."--**Science News**

"Webb's potential scenarios for specific futures are superb, providing detailed visions for society to avoid as well as achieve."--John C. Havens, executive director, IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems

"Her writing is very clear and accessible, and the interesting analogies she uses to illustrate what may occur when algorithms make decisions for us make for compelling reading. This fascinating look at how AI will continue to revolutionize human experiences in unimaginable ways will appeal to anyone interested in AI, human-computer interactions, and machine learning in the private and public sectors."

### III. CONCLUSION

Amy Webb's The Big Nine comes at a critical moment in which artificial intelligence (AI) is paving the way for technological innovations while the public increasingly becomes worried about how the "Big Nine" are handling individual data and training AI algorithms. Webb positions herself as an advocate and critic of the way these companies

and their governments are handling AI and ultimately presents a call to action: "It is both a warning and a blueprint for a better future" (p. 9). Based on her experiences with government officials, academics, and AI developers and decision makers in the tech sector, she presents an argument supported by a breadth of personal and referential knowledge that lends credibility to her futurist argument. The book opens with Webb's "Introduction: Before it's too Late," in which she states that the goal of her book is to provide an overview of the history and state of AI in the United States and China, present three potential future scenarios, and make tangible and actionable suggestions that can be followed now and in the future to ensure that AI is steered on the path.

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