

The Chip War: The Fight for the World's Most Critical Technology (Chris Miller)

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"Yesterday's chips are so, so far behind today's chips. Tomorrow's chips will make today's chips seem ancient and quaint."

"In the age of AI, it's often said that data is the new oil. Yet the real limitation we face isn't the availability of data but of processing power."

Birth of the Semiconductor Revolution

The book starts with a review of previous semiconductor research, especially the integrated circuit discovery—that, although unfortunately, was made independently by two different scientists, Jack Kilby and Robert Noyce. These two innovations birthed contemporary electronics, armaments, appliances, and everything in between, ushering in a technological explosion that eventually influenced every single aspect of existence. The Chip War is the history of the explosive growth of the industry, particularly as it showed how the US acquired control over the chip's design and production, mainly during the Cold War. Since the Pentagon and NASA were utilising chips for military and space applications, national security issues and semiconductor technology were intrinsically tied. The book proceeds to the 1970s and 1980s, during which period the U.S. started sharing its chip know-how with its allies. Technology transfer is the policy shift that led countries like South Korea, Taiwan, and Japan to develop their competitive chip industries. Miller discusses

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how technology aid from the United States helped companies such as Sony and Samsung in South Korea and Japan become major players in the electronic market. For example, Sony, a Japanese company, dominated the consumer electronics market by transferring chip technology, producing devices like the Walkman that the Americans were unable to invent.

Taiwan: A Critical Link in the Global Chip Supply Chain

The book subsequently reports the growth of Taiwan's semiconductor industry. Taiwan stood out as a vital link in the world's semiconductor supply chain and was held between American and Chinese geopolitical demands. Miller explains how TSMC, the leading manufacturer of leading-edge semiconductors in the world, was able to get off the ground with US assistance. One of the most important players in an ongoing high-tech battle between the US and China is TSMC, whose rise was nurtured by Taiwan's special relationship with the US. Miller indicates how the dominance of Taiwan in the production of semiconductors worldwide and vulnerability to possible Chinese attacks elevate the geopolitical importance of the country more than ever.

China's Bid for Chip Independence

The evolution of China as a legitimate chip-making competitor is also covered in the book. Today, in the early years of the twenty-first century, it has spent billions on its domestic chip sector, being at least somewhat of a technological backwater in the 1960s. Xi Jinping's declaration in 2014 that "without cybersecurity, there is no national security" formed the context against which the country vigorously pursued the establishment of a local semiconductor sector. Miller argues that China tried to overthrow the hegemony of American chip manufacturers, particularly Intel, NVIDIA, and TSMC, by using state-owned companies like SMIC. It continues with the analysis of the current geopolitical implications of semiconductor production. In the same vein, it views the growing industry of domestic Chinese chip industry as a national security threat for the United States.

Chip Control: The Heart of U.S.-China Struggle

The strategic value of chips in both military and economic terms is an all-important topic for the book. Miller tracks the unfolding actions where the global supply chain of semiconductors has moved to a battlefield between the U.S. and China, each competing for control over critical chip

technologies. In rising tension, the battle over chip production is framed and defined as one key element of the broader geopolitical struggle between these two superpowers. The author also examines the weaknesses of global chip supply chains. He critiques how pandemics, for instance, the COVID-19 pandemic, highlighted the fragility of the semiconductor industry and how vast amounts of its industry have relied on just a few firms, especially TSMC. The US, Europe, and others are now facing the task of how they can securely ensure themselves of these critical chips for everything from smartphones to military systems. Miller, in *Birth of the Semiconductor Revolution*, says the next great technological as well as geopolitical battles will be fought not with armies but with technology, particularly with semiconductors.

Geopolitical and Economic Implications

Miller bolsters the case that access to cutting-edge chip technology is a national security concern rather than an economic one, making it one of the most significant features of *The Chip War*. Miller links semiconductor development to more general geopolitical developments. International influence, economic competitiveness, and military might are significantly impacted by competition for semiconductor production. The author, for instance, highlights the use of semiconductors in contemporary warfare, noting that they are necessary for everything from sophisticated radar systems to drones and missiles.

Miller also talks about the economic influence of the semiconductors, which have now become one of the cornerstones of global supply lines. Therefore, this battle for supremacy between the US and China over semiconductors is also about who would dominate the economic infrastructure of the 21st century. With semiconductors powering sectors as diverse as telecommunications to the manufacturing of cars, it is a position from where nations controlling chip production can very much exert their influence upon the global markets.

The writer points out that geopolitics are shifting through global power emanating from chipmakers based in Taiwan, South Korea, and China. Taiwan is a small island nation now at the centre of this US-China chess game because of its involvement with the semiconductor sector. The world economy would be severely shaken if mainland China were to invade Taiwan's military since this would severely affect the worldwide chip supply chain. In *The Chip War*, Chris Miller mentions that the global semiconductor supply chain is diversified and no one nation controls the

entire process from designing to manufacturing to packaging and marketing. Each process is divided among multiple nations, with Taiwan, South Korea, and the United States contributing to each specific aspect. Miller discusses how the actions of the United States, such as restrictions on the transfer of advanced technology and trade barriers, have largely derailed China's quest to become self-sufficient in chip manufacturing. This is making chip production more robust but also more complicated in terms of national security interests and geopolitical machinations.

Conclusion

In *Chip War* by Chris Miller, the author has extensively analysed the history and the current state of the semiconductor chip industry in the current scenario and future possibilities. I praise him for including the maps of the East Asian chip producers (who played a pivotal role in those times, which resulted in today's major evolution in technology) and pictures of various instances, i.e., the manufacturing units and famous personalities in the process.

It's a revelatory, very timely history of one of the most vital technologies of the 21st century. The author makes the case in this work that semiconductors are more than just technological devices; they are tools that influence the path of global power