

## Chip War: The Fight for the World's Most Critical Technology

By Chris Miller

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Reviewed by Brennan Gallagher

The Joe Biden administration and the Department of Defense maintain a current policy of “strategic ambiguity” toward the defense of Taiwan. However, President Biden openly stated last year that he would use military force to support Taiwan’s defense. Why should the American people and the U.S. Government consider the protection of Taiwan a national security interest? With the withdrawal from Afghanistan only 2 years ago, does the defense of Taiwan satisfy the Weinberger Doctrine, which stipulates that forces not be committed to combat unless in the vital national interests of the United States?

In *Chip War*, Chris Miller, an associate professor of international history at the Fletcher School of Law and Diplomacy at Tufts University, offers a novel justification. Miller delivers an

insightful discussion of several conflicts associated with the rise of semiconductors and provides a detailed history of the industry, the tycoons who shaped it, and the strategic importance of Taiwan’s role in the current geopolitical environment. He omits the typical arguments that revolve around the defense of democracy and liberalist ideology, instead offering a coherent realist rationale for the defense of Taiwan. Miller’s compelling thesis is that the semiconductor industry shapes international politics, the world economy, and the global balance of power. Even though it is unstated, Miller uses the framework of strategic competition between the United States and China to address the criticality of high-end semiconductors.

The highlight of *Chip War* is the exhaustive context about Taiwan’s role as a linchpin in the global production of semiconductors, which are used in everything from smartphones to advanced weapons systems. Miller details the history, science, and business leaders underpinning the modern semiconductor industry and how the industry shapes today’s global balance of power. For readers with no prior understanding of semiconductors and microchips, Miller illuminates each technological advancement, from William Shockley’s theorization of the solid-state valve in 1945 to the divergence of chip types and extreme ultraviolet lithography processes used in modern chip fabrication. Examining the science and complex history of semiconductors reveals why these technologies and manufacturing processes cannot be easily replicated. This substantiates the central claim of *Chip War*: that U.S. interests are tied to Taiwan for high-end semiconductors because the United States cannot quickly redevelop domestic capacity to produce comparable technology. Furthermore, the U.S. strategy of economic offshoring gave the Taiwanese a significant manufacturing lead—a lead that Intel, Micron, or any other U.S.-owned semiconductor manufacturer cannot reclaim anytime soon.

*Chip War* also strikes a unique balance between history and suspense. Miller walks the reader through several

historical conflicts associated with the technological rise of semiconductors, from the U.S.-Soviet struggle to best integrate microchip-enabled technologies into weapon systems after the Vietnam War to the current economic tug-of-war between the United States and China over Taiwan’s manufacturing capabilities. Miller deftly weaves in the exploits of several Elon Musk–like revolutionaries in the semiconductor industry with historical context and a surprisingly gripping tale of corporate and national espionage, third-party purchasers, and proprietary data transfers that account for the globalization of semiconductor processes. The semiconductor industry was also a critical facet during the Cold War, with Joseph Stalin and his KGB even going so far as to establish the enigmatic Directorate T, in which the *T* stood for *teknologia*. With capital investment from the Kremlin, Directorate T built a technology-focused city called Zelenograd to replicate the success of Silicon Valley with semiconductors. Miller argues that the Kremlin’s strategy of stealing U.S. proprietary technologies never yielded the Soviet Union an advantage. Soviet spies were able to acquire the most advanced microchips from the United States, but they could not replicate the precise manufacturing processes to produce their own microchips. This futile effort cost the Soviets millions of dollars and left their tech sector years behind that of the United States.

Among the unique insights from *Chip War*’s exploration of Cold War–era semiconductor development and espionage is that the many strengths associated with U.S. post–Cold War strategy, including establishing multilateral supply chains in Asia, are causal factors for current shortcomings in the American semiconductor industry. The United States focused on innovation and creativity and pushed manufacturing offshore to support economic interdependence. Silicon Valley focused solely on advancing technologies, not on manufacturing them. Miller argues that U.S.-owned technology companies swapped out their Ph.D.-holding innovative leaders for Ivy League MBA managers to maximize efficiency and increase profit margins.

Thus, this short-term beneficial strategy killed America's position as the leader in microchip fabrication. In contrast, today's policies tend toward reshoring and "friend-shoring."

The eccentric tycoons who formed the leadership of the early semiconductor industry highlight the importance of personalities and relationships. Most notably, Miller emphasizes Morris Chang, founder of the Taiwan Semiconductor Manufacturing Company (TSMC), and his role in shaping Taiwan's global position. After the leadership at Texas Instruments did not choose him for CEO, Chang elected to leave the United States to establish TSMC, and it is the presence of TSMC in Taiwan that gives the United States a critical interest in defending the island. In Taiwan, Chang singlehandedly grew the most crucial semiconductor facilities in the world. Unlike a McDonald's franchisee, other countries cannot simply duplicate TSMC's facilities, skilled workers, and exquisite technological processes. This fact is the foundation for Miller's thesis: Taiwan's current semiconductor industry anchors international politics and could decide the balance of military power.

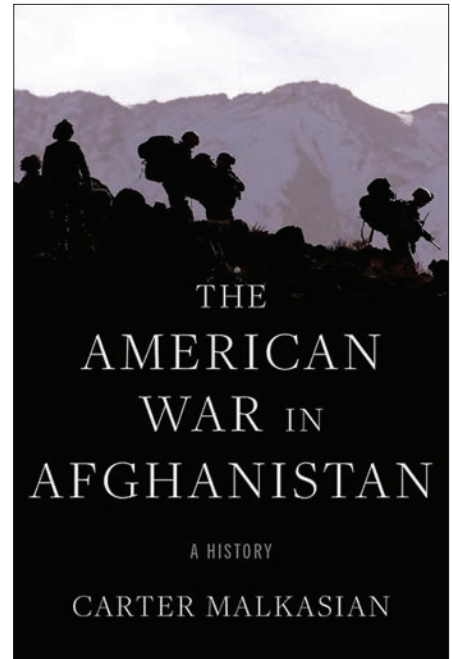
Although Miller writes primarily from an American perspective, he acknowledges the views of Taiwan and other semiconductor-producing countries on the strategic competition between the United States and China. Miller states that Taiwanese leadership "recognizes [the chip industry] as its greatest source of leverage on the international stage." Taiwanese political and business leaders, particularly Chang, built Taiwan's semiconductor industry to be a source of strategic capital. By no accident, Taiwan, a small democratic island about the size of Maryland, produces 90 percent of the world's most advanced semiconductors. This strategic anchoring provides additional value to Miller's claim. However, when addressing the modern conflict, Miller picks a side and assumes the reader will accept the predominance of Western literature on the topic. To this point, Miller could have further explored Chinese identity and Taiwan or acknowledged alternative reasons why President

Xi Jinping seeks reunification. He misses an opportunity to provide a deeper perspective on Chinese global and regional hegemonic objectives.

*Chip War* is a practical and valuable reference for why Americans should care about Taiwanese independence and the surprising ways in which the semiconductor industry ties our security together. It is a must-read for anyone uncertain about why the U.S. Government has a national interest in protecting Taiwan—or more so, the advanced semiconductor facilities—from Chinese reunification. For joint force decisionmakers, *Chip War* offers a compelling argument for fulfilling the Weinberger Doctrine and a valuable window into the future competition over technology and national security. Chris Miller does an outstanding job of capturing the Taiwan dilemma through a novel lens. And he does more than explain why the United States should care about Taiwan; he provides the necessary history and context to justify its defense. **JFQ**

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## The American War in Afghanistan: A History

By Carter Malkasian

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Reviewed by Kevin D. Stringer

Carter Malkasian provides a magisterial and balanced account of the American intervention in Afghanistan from 2001 until the early months of 2021. His writing, analysis, and credibility are buttressed by his multiple deployments to the country at both the provincial and district levels as well as by his fluency in Pashto. His roles as senior advisor to the military commander in Afghanistan and later to the Chairman of the Joint Chiefs of Staff further enhance his insights. Since the topic can be approached from a myriad of perspectives, Malkasian's book is likely the first in a long series of historical examinations over the next several decades. His book can serve as the flagship for those who follow, given its comprehensiveness and lucidity. While lessons for future conflicts are abundant, *The American War in*