Sharon Weinberger, *The Imagineers of War: The Untold Story of DARPA, The Pentagon Agency that Changed the World* (New York: Alfred A. Knopf, 2017), 496.

The book, *Imagineers of War*, is a detailed account of Defence Advanced Research Projects Agency's (DARPA, previously known as ARPA) different scope of projects from its inception to current period. DARPA is an agency in the United States responsible for the development of emerging technologies for use by the military. Sharon Weinberger, the author of *Imaginary Weapons: A Journey Through the Pentagon's Scientific Underworld,* was the national security editor at The Intercept, an online newspaper. She has extensively written on the subject of military science and technology for different newspapers like Wired, The Washington Post, and the BBC among others. She has been a fellow at Radcliff Institute for Advanced Study at Harvard University, Woodrow Wilson International Center for Scholars, MIT's Knight Science Journalism program and International Reporting Program at Johns Hopkins School of Advanced International Studies.

The book contains nineteen chapters apart from the prologue and the epilogue. The author has provided the backstory of many directors and administrators of APRA and how their personal inclinations to a particular subject influenced the agency's projects or overall policy. Chapter *Scientia Potentia Est*, a Latin aphorism meaning 'Knowledge is Power', gives the early years of Cold War between the US and USSR where both states and their leadership wanted to get an edge over the other side. Chapter *Mad Men* discusses the situation in American political and military circles when Soviet Union launched its first satellite, 'Sputnik'. Despite the big surprise pulled up by USSR, the US experienced strong bureaucratic rivalry between the US government agencies on ownership of the satellite program. Army, Air Force and Navy started their separate space programs to compete with Soviet program but failed to achieve any headway. The then President

Eisenhower established a new agency, ARPA (Advanced Research Project Agency), in response to the launch of Sputnik under immense public pressure. ARPA was in charge of US space program before the establishment of National Aeronautics and Space Administration (NASA). As NASA then controlled the civilian space program, ARPA's space program was slightly different because it handled spy satellites and ballistic missile defence program.

Chapter, *Mad Scientists*, describes the launch of 'Operation Paperclip' to recruit German scientists from Europe for the space program. It also gives a brief account of different ARPA projects in its early years such as launch of Explorer 1, satellite navigation 'Project Transit' which later became the basis of Global Positioning System (GPS), 'Project Argus' to test whether nuclear weapons detonated in the magnetosphere could generate a force field that would be able to fire incoming missiles and 'Project Orion' – interplanetary spaceship. In October 1958, ARPA lost its scientific satellite program to newly re-configured, NASA. The next chapter, *Society for the Correction of Soviet Excuses*, gives details about ARPA's two new projects SCORE (Signal Communications by Orbiting Relay Equipment) to launch the first Inter-Continental Ballistic Missile (ICBM) to space and Discoverer which was a series of satellites for testing of life-support system in space. It was later revealed that project Discoverer was actually a cover for CIA's satellite program Corona – US first reconnaissance satellite against USSR.

Chapter *Welcome to the Jungle* explores the ARPA's counterinsurgency program Project AGILE in Vietnam and the establishment of Combat Development and Test Center to conduct counterinsurgency research in Southeast Asia. Counterinsurgency program in Vietnam included establishment of 'strategic hamlets', introduction of simple weapons appropriate for jungle warfare and chemical plant killers to deprive the Vietcong fighters of foliaga and food. Chapter *Ordinary Genius* discusses the first Soviet anti-ballistic missile program Netro Zius and ARPA's program BAMBI (Ballistic Missile Boost Intercept) to intercept

Soviet missiles in their launch phase. The program BAMBI later became part of project ARPA Terminal Defense (ARPAT). This chapter also explains ARPA's wide scale seismology program, Worldwide Standardized Seismograph Network. Chapter *Extraordinary Genius* describes ARPA's focus in the field of human behavior and psychological warfare. It also discusses about the program ARPANET which later became the basis of development of present day Internet. In chapter *Up in Flames*, the author describes the weakening position of ARPA's AGILE project. Later the assassination of two presidents, Vietnam's President Deim and US President Kennedy, caused total failure of ARPA's counterinsurgency program in Vietnam.

In the chapter *A Worldwide Laboratory*, Weinberger explores how ARPA expanded its Vietnam mandate to other regions of the world. ARPA's counterinsurgency program Project AGILE was no longer limited to guerrilla warfare in Southeast Asia rather it expanded to Cuba, to the Middle East to Africa. ARPA was working on simulating human behavior of nations or individuals in the laboratory condition and comparing the two. Chapter *Blame It on the Sorcerers* details the ARPA's Simulmatics experiment in Vietnam which was aimed to solve the problem of insurgency using tools of social science. The project was judged as total failure. Chapters *Monkey Business* and *The Bunny, the Witch and the War Room* thoroughly discuss three projects of ARPA; Project Dribble, QH-50 and TR-1. Project Dribble was designed to see whether Soviets might be able to hide a nuclear test by conducting it underground through muffling the signals by reducing the amplitude of seismic waves. On the other hand, the QH-50 was the first unmanned helicopter, and ARPA's project TR-1 was about U-2 version of spy plane. The author discusses the change of agency's name from ARPA to DARPA. The "D" for Defense was attached after congressional negotiation ensure that DARPA's programs are attributable to the sponsoring agency. The chapter *Invisible War* describes extensive efforts by DAPRA for building the first stealth aircraft bomber for the US. The author also gives some details about

DARPA's concept for first drone and the work which later led to the launch of first MQ-1 Predator drone. Chapter *Synthetic War* indicates the idea of simulators and their inception to the use for war scenarios, the project was called SIMNET. In the last part, the author stated DARPA's data-mining program in Afghanistan as part of counterinsurgency COIN efforts.

DARPA played a vital role in some research projects of national level which led to the emergence of Internet, drones, stealth bombers etc. But from the inception of the agency until the present, agency's leadership have inclined to look for 'technical fixes' to political problems which, at times, resulted in disaster like use of defoliation Agent Orange in Vietnam. The author observed that the agency has essentially been absent from the past 10 years of national security debates. Weinberger has more critical, less mockery, account to the history of US military technology. The book reinforces two perceptions; first, the US used smaller and undeveloped countries as the testing laboratory for its social and military technology experiments; and second, that influence of individual personalities and leadership played a significant role in DARPA's operations and projects over the time. Overall, the book is a good read to understand the historical evolution of the US military technology and its usage over past sixty years.

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