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## [Chapter 7: Violent Conflict](#)

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(~8,000 words)

## Chapter 7: Violent Conflict

At the dawn of the nuclear age, violent conflict crossed a threshold into the domain of global catastrophic and existential risk. This was a profound turning point in history: humanity had invented a technology powerful enough to pose an immediate threat to all human life. This initiated a new epoch, characterized by the potential for the imminent end of the world at any moment from human action. Prior to that moment, technology arms races forced everyone involved to employ their most powerful weaponry to win at war. Now for the first time, civilization was reshaped in an attempt to make sure its most advanced weapons technology would never be deployed.

Since WWII and the creation of nuclear weapons, there has been a continuous blurring of lines between: violence and non-violence, war and peace, weapon and civilian tech, adversary and ally. During this time there have been no direct wars between major powers, and no further nuclear strikes since Hiroshima and Nagasaki. Some view this as evidence that our civilization has demonstrated progress at addressing the problem of violence. However, rather than violence disappearing, the fronts of war were simply changing. Nuclear weapons did not bring about the end of war; they ushered in an era of *war by other means*. Bullets and bombs were supplemented with more hidden means of violence such as psychological and economic forms. Great powers invested billions in massive propaganda and cultural influence campaigns as well as espionage and coordinated interference in the political processes of other nations. Financial capital, weapons, and training were also poured into proxy warfare efforts to promote national strategic interests around the world.

Conflicts between major powers today do not primarily involve the use of physical force, and targeting an adversary's military assets. Such *conventional warfare* still occurs, and given recent escalations in conflict and massive arms build ups, the likelihood of large-scale kinetic war between major powers may be increasing. But conventional violence is not privileged in the way it once was. Today, war manifests in a more complex fashion: somewhat hidden yet pervasive, not as deadly as the trenches and the firebombings but equally intent on victory. Major powers have been actively engaged in *irregular warfare* (also known as *systemic* or *unrestricted warfare*

- see box 2 in the section below)<sup>1</sup> which includes economic<sup>2</sup> (sanctions, currency and trade

<sup>1</sup> In this chapter the terms irregular, unconventional, systemic, and unrestricted warfare will largely be used synonymously to denote the difference between a war that seeks to directly defeat an enemy's armed forces in battle vs one which indirectly undermines their political will to fight and uses any means necessary to force them to submit to one's interests. These terms are occasionally used differently in the defense literature. Our choice to use them as synonyms is largely stylistic and justified in part by their many overlapping definitions. For more understanding of the potential differences amongst terms, see below.

The US Department of Defense (2020) defines "irregular warfare" as "a struggle among state and non-state actors to influence populations and affect legitimacy." This is a form of warfare that "favors indirect and asymmetric approaches". Some analysts have also taken an expanded definition of the term, such as "activities short of conventional and nuclear warfare that are designed to expand a country's influence and legitimacy, as well as to weaken its adversaries (Jones, 2021). Our approach here is closer to the latter definition.

"Unrestricted warfare" was a term coined by Colonels Qiao Liang and Wang Xiangsui in a book of the same name, and denote the evolution of war towards *using all means, including armed force or non-armed force, military and non-military, and lethal and non-lethal means to compel the enemy to accept one's interests*.

Less often used is "systemic warfare", which can be taken to mean involving attacks on financial systems, creating dependent regions and peoples, mass participation in anti-state activity, cyber operations, selective bio-attacks and attacks on food, water and energy infrastructure (Johnson, 2014).

Although there is no universally agreed definition, "Conventional", or equivalently "traditional" warfare, generally refers to a form of war between states and their militaries where the objective is to defeat the adversary's armed forces, or seize and retain territory (Department of Defense, 2017).

"Unconventional" warfare in US joint doctrine is defined as activities which are conducted to enable resistance movements or insurgencies to coerce, disrupt, or overthrow a government or occupying power. This is usually a key part of irregular warfare strategy (US Army Special Operations Command, 2016).

The above terms are also closely related to theories and debates in conflict research regarding generations of warfare. Conventional/traditional warfare generally relates to the first three generations, unconventional warfare typifies fourth generation, and unrestricted warfare characterizes fifth generation warfare (Osinga, 2006; Reed, 2008; Krishnan, 2022).

United States Department of Defense. *Summary of the Irregular Warfare Annex to the National Defense Strategy*. 2020.

<https://media.defense.gov/2020/Oct/02/2002510472/-1/-1/0/Irregular-Warfare-Annex-to-the-National-Defense-Strategy-Summary.PDF>

Jones, Seth, G. *Three Dangerous Men: Russia, China, Iran and the Rise of Irregular Warfare*. W. W. Norton & Company, 2021.

Johnson, Robert, A. "Predicting Future War," *Parameters* 44, no. 1 (2014).

<https://doi.org/10.55540/0031-1723.2801> United States Department of Defense. *Directive 3000.07*. 2017. <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/300007p.pdf?ver=2019-02-04-124731-573>

United States Army Special Operations Command. *Unconventional Warfare Pocket Guide*. 2016. <https://info.publicintelligence.net/USASOC-UW-PocketGuide.pdf>

Qiao, Liang, and Wang, Xiangsui. *Unrestricted Warfare: China's Master Plan to Destroy America*. Panama: Pan American Publishing, 2002.

Barno, David and Bensahel, Nora. *A New Generation of Unrestricted Warfare*. War on the Rocks, 2016. <https://warontherocks.com/2016/04/a-new-generation-of-unrestricted-warfare>

Osinga, Frans, P. B. "Science, Strategy and War: The Strategic Theory of John Boyd." *Routledge*, London. 2006. <https://doi.org/10.4324/9780203088869>

Reed, Donald, J. "Beyond the war on terror: Into the fifth generation of war and conflict." *Studies in Conflict & Terrorism* 31.8 (2008):684-722. [doi:10.1080/10576100802206533](https://doi.org/10.1080/10576100802206533)

Krishnan, Armin. "Fifth Generation Warfare, Hybrid Warfare, and Gray Zone Conflict: A Comparison." *Journal of Strategic Security* 15, no. 4 (2022):14–31. <https://doi.org/10.5038/1944-0472.15.4.2013>

<sup>2</sup> Lowe, Vaughan, and Tzanakopoulos, Antonios. "Economic Warfare." *Max Planck Encyclopedia Of Public International Law*, (2010). <https://papers.ssrn.com/abstract=1701590>

conflict, price gouging, etc.), supply chain<sup>3</sup> (export controls, resource dominance), cyber<sup>4</sup> (attacks within the digital domain and all of the critical infrastructure which depends upon it), political<sup>5</sup> (coercive diplomacy), psychological and population-centric<sup>6</sup> (large-scale manipulation via propaganda and information campaigns), and proxy warfare<sup>7</sup>. The goal is similar to conventional war: the use of coercive means to acquire something of political or strategic value, such as economic, geographical, or military advantage<sup>8</sup>. However, in the presence of massively asymmetric and existentially destructive military power, direct conflict was sublimated into more indirect forms. Rather than full frontal attack and annihilation, competitors employ all means at their disposal to manipulate the adversary to submit to their interests.

A profound line in history was drawn when nuclear weapons were created. The difference between the pre-atomic and atomic age was so significant that the entire system of international politics was restructured as a result. We are at another moment of similar magnitude, which is also vastly more complex and unstable (see table 1). We are developing and disseminating new types of weapons with global catastrophic potential, but many of these do not require the same access to novel materials and major nation state level engineering needed as for nuclear tech<sup>9</sup>.

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Weiss, Linda. "Re-emergence of Great Power Conflict and US Economic Statecraft." *World Trade Review*. (2021):20(2):152-168. [doi:10.1017/S1474745620000567](https://doi.org/10.1017/S1474745620000567)

<sup>3</sup> Chen, Ling, S., and Evers, Miles, M. "'Wars without Gun Smoke': Global Supply Chains, Power Transitions, and Economic Statecraft." *International Security* 48, (2023):164–204. [https://doi.org/10.1162/isec\\_a\\_00473](https://doi.org/10.1162/isec_a_00473)

<sup>4</sup> Parks, Raymond, C. and Duggan, David, P. "Principles of Cyberwarfare." *IEEE Security & Privacy* 9, (2011):30–35. <https://doi.org/10.1109/MSP.2011.138>  
Atreus, Ridge. "Cyberwarfare: Threats, Security, Attacks, and Impact." *Journal of Information Warfare* 19, (2020):17–28. <https://doi.org/10.70710/sitj.v2i1.31>

<sup>5</sup> Poznansky, Michael, and Scroggs, Matt, K. "Ballots and Blackmail: Coercive Diplomacy and the Democratic Peace." *International Studies Quarterly* 60, (2016):731–741 <https://doi.org/10.1093/isq/sqw016>

Art, Robert, J. and Cronin, Patrick, M. *The United States and Coercive Diplomacy*. US Institute of Peace Press, 2003.

<sup>6</sup> Narula, Sunil. "Psychological operations (PSYOPs): A conceptual overview." *Strategic Analysis* 28, (2004):177–192. <https://doi.org/10.1080/09700160408450124>  
Wall, Tyler. "U.S. Psychological Warfare and Civilian Targeting." *Peace Review* 22, (2010):288–294 <https://doi.org/10.1080/10402659.2010.502070>

Taylor, Philip, M. *Introduction: Looking Through a Glass Onion: Propaganda, Psychological Warfare and Persuasion*. In *Munitions of the Mind* 1–16. Manchester University Press, 2013.

<sup>7</sup> Fox, Amos, C. "Conflict and the Need for a Theory of Proxy Warfare." *Journal of Strategic Security* 12, (2019):44–71. doi:[10.5038/1944-0472.12.1.1701](https://doi.org/10.5038/1944-0472.12.1.1701)

Mumford, Andrew. "Proxy Warfare and the Future of Conflict." *The RUSI Journal* 158, (2013):40–46. <https://doi.org/10.1080/03071847.2013.787733>

Krieg, Andreas and Rickli, Jean-Marc. "Surrogate warfare: the art of war in the 21st century?" *Defence Studies* 18, (2018):113–130. <https://doi.org/10.1080/14702436.2018.1429218>

<sup>8</sup> Clausewitz, Carl von. *ON WAR*. Lebooks Editora, 2022.

<sup>9</sup> This is a point made by many others. One particularly good representation is in Peterson, C., Duettmann, A., Miller, Mark. *Gaming the Future*. Foresight Institute Press, 2022.

With increasingly powerful, increasingly available technologies, nation states are not the only groups to consider when thinking about globally catastrophic violence<sup>10</sup>. Non-state actors have become much more relevant. This includes a range of agents with very different means and motivations such as lone-actors (like a disenfranchised, or sadistic, shooter or bomber), international criminal organizations (ICOs), and groups driven to violence by a variety of religious and political ideologies. In a deeply unstable planetary situation, more and more people will be driven to take radical action, including violence, as a result of genuinely dire circumstances such as the hundreds of millions of refugees whose homes and lives will be lost in the next decade from environmental catastrophe.

With advanced technology, more actors are able to cause catastrophic violence for many different purposes. Cartels and ICOs now challenge (and collude with) national militaries and police forces, patrolling cities in armored vehicles with automatic weapons and rocket launchers as they traffic drugs, weapons, and people<sup>11</sup>. Radicalized ex-military groups have disrupted critical civilian infrastructure by cutting fiber-optic cables and executing precision attacks on transformer stations with assault rifles<sup>12</sup>. Hackers have successfully shut down pipelines, major dams, and even nuclear systems<sup>13</sup>. Both state and non-state actors are equipping cheap

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<sup>10</sup> This is well known in the security community. For an introductory discussion, see Homer Dixon, Thomas. *The Rise of Complex Terrorism*. Foreign Policy, 2009. <https://foreignpolicy.com/2009/11/16/the-rise-of-complex-terrorism/>

<sup>11</sup> There has been a widespread increase in the use of military force and militarized police against ICOs, particularly in Latin America. The level of violent conflict has been qualified by legal and security experts as equivalent to non-international armed conflicts (Kalmanovitz, 2022).

There is also an ongoing debate whether organized crime falls under the provisions of international humanitarian law due to collusion with State and non-State actors, and the blurry line between economically motivated ICOs and politically motivated non-State armed actors (Muggah, 2023).

Kalmanovitz, Pablo. "Can criminal organizations be non-State parties to armed conflict?" *International Review of the Red Cross* 105, (2023):618–636. <https://doi.org/10.1017/S1816383122000510>

Muggah, Robert. "Organized Crime in Armed Conflicts and Other Situations of Violence." *International Review of the Red Cross* 105, (2023):569–574. <https://doi.org/10.1017/S1816383123000036>

<sup>12</sup> Smith, Rebecca. *Assault on California Power Station Raises Alarm on Potential for Terrorism*. Wall Street Journal, 2014. <https://www.wsj.com/articles/SB10001424052702304851104579359141941621778>

<sup>13</sup> There have been an increasing number of significant cyber attacks over the last two decades, with many impacting military assets and civilian infrastructure (Whyte & Mazanac, 2023).

The 2010 Stuxnet attack against Iran damaged over a thousand centrifuges at the Natanz uranium enrichment facility and was described as the "most technologically sophisticated malicious program developed for a targeted attack to date", marking an evolution in cyberwarfare operations (Lindsay, 2013). In 2021, Colonial Pipeline Co., the biggest oil pipeline company in the U.S. was hit by a ransomware attack which forced a week-long shut down the Colonial Pipeline (which provides 100 million gallons of fuel a day) for the first time in fifty-seven years, resulting in a localized fuel shortage, concluding with a ransom payout of over 4.4 million dollars.

Whyte, Christopher, and Mazanec, Brian. "Understanding Cyber-Warfare: Politics, Policy and Strategy." *Routledge, London*, 2023. <https://doi.org/10.4324/9781003246398>

commercial drones with explosives, costing as little as a few hundred dollars, to destroy critical infrastructure like munitions factories and oil fields, causing hundreds of millions to billions in damages<sup>14</sup>. With open source development, drone swarm and facial recognition algorithms are available to anyone with internet access<sup>15</sup> – despite being originally developed at elite technical universities whose research is subject to ethical review boards. With commercially available, remotely controlled, digital technologies, anyone with the relevant skills can pursue highly consequential targets anonymously, shrouded in cryptographically secured secrecy.

More and more groups are also willing to employ violence to achieve their goals. Deaths from armed conflict are increasing globally<sup>16</sup>. Domestic political tensions, distrust in government, polarization, and acts of political violence are on the rise<sup>17</sup>. Economic inequality is skyrocketing<sup>18</sup>. Nearly half of the global population lives on less than \$6.85 per day while the two

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Lindsay, Jon, R. “Stuxnet and the Limits of Cyber Warfare.” *Security Studies* 22, (2013):365–404.  
<https://doi.org/10.1080/09636412.2013.816122>

Beerman, Jack, Berent, David, Falter, Zach, and Bhunia, Suman. “A Review of Colonial Pipeline Ransomware Attack.” *2023 IEEE/ACM 23rd International Symposium on Cluster, Cloud and Internet Computing Workshops*. (2023): pp. 8-15. [doi:10.1109/CCGridW59191.2023.00017](https://doi.org/10.1109/CCGridW59191.2023.00017)

<sup>14</sup> Burja, Samo. *Drone Adoption Favors Quantity of Quality*. Bismarck Brief, 2022.  
<https://brief.bismarckanalysis.com/p/drone-adoption-favors-quantity-over>

<sup>15</sup> See the online video of a scientist creating a slaughter bot. Wenus, L. “We built an AI-controlled homing/killer drone -- full video.” [luiswenus]. (2024, March 2). [Post]. X. Video, 3 min., 55 sec.  
<https://twitter.com/luiswenus/status/1763979699045253359>

<sup>16</sup> ACLED. *ACLED Year in Review: Global Disorder in 2022*. 2023.  
<https://acleddata.com/2023/01/31/global-disorder-2022-the-year-in-review/>

<sup>17</sup> Kleinfeld, Rachel. *Polarization, Democracy, and Political Violence in the United States: What the Research Says*. Carnegie Endowment for International Peace, 2023.  
<https://carnegieendowment.org/2023/09/05/polarization-democracy-and-political-violence-in-united-states-what-research-says-pub-90457>

Parker, Ned, and Eisler, Peter. *Political violence in polarized U.S. at its worst since 1970s*. Reuters, 2023.  
<https://www.reuters.com/investigates/special-report/usa-politics-violence/>

Kleinfeld, Rachel. *The Rise in Political Violence in the United States and Damage to our Democracy*. Carnegie Endowment for International Peace, 2022.  
<https://carnegieendowment.org/2022/03/31/rise-in-political-violence-in-united-states-and-damage-to-our-democracy-pub-87584>

Kornfield, Meryl, and Aflaro, Mariana. *1 in 3 Americans say violence against government can be justified, citing fears of political schism, pandemic*. Washington Post, 2022.  
<https://www.washingtonpost.com/politics/2022/01/01/1-3-americans-say-violence-against-government-can-be-justified-citing-fears-political-schism-pandemic/>

Gallup. *Trust in Government*. Accessed June 20th, 2025.  
<https://news.gallup.com/poll/5392/trust-government.aspx>

<sup>18</sup>Hung, H0-fung. (2021). “Recent Trends in Global Economic Inequality.” *Annual Review of Sociology* 47, (2021):349–367. <https://doi.org/10.1146/annurev-soc-090320-105810>  
 Oxfam. *Survival of the Richest: How we must tax the super rich now to fight inequality*. 2023.  
<https://oxfamlibrary.openrepository.com/bitstream/handle/10546/621477/bp-survival-of-the-richest-160123-en.pdf>

Bhandari, A. *World Inequality Report 2022*. Reuters, 2021.  
[https://www.reuters.com/graphics/GLOBAL-ECONOMY/BILLIONAIRES/klvykndqgvg/wealth-inequality\\_wealth.jpg](https://www.reuters.com/graphics/GLOBAL-ECONOMY/BILLIONAIRES/klvykndqgvg/wealth-inequality_wealth.jpg) <https://wir2022.wid.world/>



wealthiest people in the world have higher net worths than the GDP of ~184 nations<sup>19</sup>. When a major percentage of the population is under near-constant stress to satisfy basic needs, and they can clearly see incredible amounts of wealth being accumulated by others, an increased willingness to be violent appears inescapable. Rampant inequality is both ethically concerning and existentially risky when one realizes, desperation and radicalization are increasing just as vastly more powerful technologies are being distributed to the broader population, i.e., *decentralized catastrophe weapons*.<sup>20</sup>

The willingness to be violent and the underlying drivers of conflict have not gone away. The motivation remains, the means have changed, and the potential for harm has radically increased. Through innovation in nuclear capabilities and other advanced military technologies, the total destructive energy available for future kinetic war is trillions-fold greater than it has ever been before<sup>21</sup>. In the grand scheme of history, 80 years is but a moment, and whether or not a brief lack of globally catastrophic violence will prove enduring is definitely not certain. In 2022, deaths in armed conflicts around the world doubled, largely due to the most significant land war in Europe since 1945<sup>22</sup>. The total number of armed conflicts worldwide has also been on a steady upward trend over the last two decades<sup>23</sup>. Whether or not these trends lead to

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<sup>19</sup> Collins, Chuck. *Updates: Billionaire Wealth, U.S. Job Losses and Pandemic Profiteers*. Inequality.org, 2024. <https://inequality.org/great-divide/updates-billionaire-pandemic/>  
World Bank. *Nearly Half the World Lives on Less than \$5.50 a Day*. 2018.  
<https://www.worldbank.org/en/news/press-release/2018/10/17/nearly-half-the-world-lives-on-less-than-55-0-a-day>

World Population Review. *Total GDP: \$109.02 TN*. 2024.  
<https://worldpopulationreview.com/countries/by-gdp>

<sup>20</sup> Homer Dixon, Thomas. *The Rise of Complex Terrorism*. Foreign Policy, 2009.  
<https://foreignpolicy.com/2009/11/16/the-rise-of-complex-terrorism/>

<sup>21</sup> See in particular Tables 1 and 3 from Smil (2004) on war and energy. The total energy from a hand grenade ( $2 \times 10^6$  joules) to the Tsar Bomba ( $240 \times 10^{15}$  joules) is a ninefold (billion) order of magnitude increase. We need only go back to a civil war musket ( $1 \times 10^3$  joules) for a genuine trillion-fold (12x order of magnitude) increase.

Smil, Vaclav. "War and Energy." In *Encyclopedia of Energy*, 363–371. (2004).  
<https://doi.org/10.1016/B0-12-176480-X/00016-4>

<sup>22</sup> Davies, Shawn, Pettersson, Therese, and Öberg, Magnus. "Organized violence 1989–2022, and the return of conflict between states." *Journal of Peace Research*, 60(4), (2023):691-708.  
<https://doi.org/10.1177/00223433231185169>

<sup>23</sup> Uppsala Conflict Data finds that state based violence increased from 33 conflicts in 2001 to 56 conflicts in 2021, and non-state violence up from 41 conflicts in 2001 to 84 conflicts in 2021. They define a state-based armed conflict as "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in one calendar year." Similarly, a non-state conflict is defined as "the use of armed force between two organised armed groups, neither of which is the government of a state, which results in at least 25 battle-related deaths in a year."

escalations akin to the previous world wars is now a live question, with an answer unknowable at this time. We can appreciate the avoidance of direct, kinetic super-power conflict on one level while acknowledging that the world system which enabled the “post-war peace” has reached its end and left a vastly more dangerous world in its wake.

Tensions between major powers are increasing. Technology races are intensifying. Nuclear systems are improving. Today’s multipolar nuclear world (where multiple nations wield strategic arsenals) is young and deeply unstable<sup>24</sup>. Civilization is now passing critical ecological limits – placing constraints on future economic growth<sup>25</sup>. After WWII, many in the political leadership class argued that increasing free trade and global economic growth would usher in an era of peace<sup>26</sup>. But economic globalization merely transformed direct kinetic war between major

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Davies, Shawn, Pettersson, Therese, and Öberg, Magnus. “Organized violence 1989–2022, and the return of conflict between states.” *Journal of Peace Research*, 60(4), (2023):691-708.

<https://doi.org/10.1177/00223433231185169>

Department of Peace and Conflict Research. *Uppsala Conflict Data Program*. Accessed June 20th, 2025. <https://ucdp.uu.se/>

<sup>24</sup> India is believed to have attained the nuclear triad around 2015 with its successful ballistic testing of its first nuclear submarine. China achieved the triad in 2020, when it unveiled its H-6N strategic bomber which can launch nuclear armed ballistic missiles. Pakistan is believed to have achieved the nuclear triad in late 2023 as it received its first submarine from China capable of equipping a nuclear armed cruise missile. In addition, on the basis of unconfirmed reports, Israel is believed to have achieved the nuclear triad as well.

ChinaPower. *How is China Modernizing its Nuclear Forces?* Accessed June 20th, 2025.

<https://chinapower.csis.org/china-nuclear-weapons/>

Kristensen, Hans, M., Korda, Matt, and Johns, Eliana. *Pakistan nuclear weapons, 2023*. Bulletin of Atomic Scientists, 2023. <https://thebulletin.org/premium/2023-09/pakistan-nuclear-weapons-2023>

Peri, Dinakar. *India’s Nuclear Triad Finally Coming of Age*. The Diplomat, 2014.

<https://thediplomat.com/2014/06/indias-nuclear-triad-finally-coming-of-age/>

Mills, Claire. *Nuclear weapons at a glance: Israel*. House of Commons Library, 2022.

<https://researchbriefings.files.parliament.uk/documents/CBP-9075/CBP-9075.pdf>

<sup>25</sup> Homer-Dixon, Thomas. *Environment, Scarcity, and Violence*. Princeton: Princeton University Press, 1999. <https://doi.org/10.1515/9781400822997>

McBain, Bonnie, Lenzen, Manfred, Wackernagel, Mathis and Albrecht, Glenn. “How long can global ecological overshoot last?” *Global and Planetary Change* 155, (2017):13–19.

<https://doi.org/10.1016/j.gloplacha.2017.06.002>

<sup>26</sup> At the beginning of the 20th century, prior to the first world war, a best-selling book by Norman Angell, *The Great Illusion* (G.P. Putnam’s Sons, 1910) argued that the economic cost of war was becoming so great that it was irrational to believe war was profitable. The book gained a great deal of popular support, and Angell later received the Nobel Peace prize for these and other ideas.

The Great Depression and hyperinflation in the Weimar Republic following WWI are often considered relevant precursors to WWII, as discussed, for example, in Steil, Benn. *The Battle of Bretton Woods*. Princeton University Press. 2013.

See also Irwin, Douglas, Mavroidis, Petros, and Sykes, Alan. “The Genesis of the GATT.” *Cambridge: Cambridge University Press*. (2008). [doi:10.1017/CBO9780511817953](https://doi.org/10.1017/CBO9780511817953)

The exact relationship between trade and violence is a contested debate which we need not hold a definitive position on. What is relevant for our purposes is that there is evidence and reason to believe that increased economic interdependence contributed to a decrease in violence, at least in the immediate period following WWII. More importantly, however, is that this position was held by prominent officials of



powers into a war against nature. If globalization decreased direct conflict between major powers in the short term, ecological overshoot is likely to increase violence as a whole in the long term. Extreme weather events continue to increase in frequency and severity. Unprecedented refugee crises and their associated political tensions are imminent, and the likelihood of resource conflict is growing (e.g., between China, India, and Pakistan, three highly populated, nuclear powers sharing the dwindling Himalayan Watershed)<sup>27</sup>.

Ballooning military budgets and all-out arms races do not indicate that major powers are preparing for peace. They reflect a radical escalation in geopolitical tensions and preparation for conflict. Current global military expenditure has increased tenfold since 1949. Global military spending in 2023 was an estimated \$2.2 trillion (roughly 40% of which was from US military spending alone), around 10x higher than the build-up prior to WWII, and 100x more than before WWI (adjusted for inflation)<sup>28</sup>. Major powers continue to build deep underground military bases

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the time and was a motivating factor in the design of the postwar order. For relevant literature on this debate, see:

Jackson, Matthew, O., and Nei, Stephan. "Networks of military alliances, wars, and international trade." *Proceedings of the National Academy of Sciences*, 112(50), (2015):15277-15284.

<https://doi.org/10.1073/pnas.1520970112>

Gartzke, Erik, and Westerwinter, Oliver. "The complex structure of commercial peace contrasting trade interdependence, asymmetry, and multipolarity." *Journal of Peace Research*, 53, (2016):325 -

343. <https://doi.org/10.1177/0022343316637895>

Garfinkel, Michelle, R., and Skaperdas, Stergios. eds. *The Oxford handbook of the economics of peace and conflict*. Oxford University Press, 2012.

Barbieri, Katherine. *The liberal illusion: Does trade promote peace?* University of Michigan Press, 2003.

<https://doi.org/10.3998/mpub.16590>

Calí, Massimiliano. *Trading away from conflict: Using trade to increase resilience in fragile states*. World Bank Group, 2019. <https://openknowledge.worldbank.org/handle/10986/32361>

<sup>27</sup> There is strong empirical research to support the link between resource scarcity (and abundance) to violent conflict (Vesco et al. 2020). Climate change and further degradation of natural resources has also been shown to increase risk of violent conflict (Levy, 2019; Onuoha, 2023). The Great Himalayan Watershed is one region which has received significant attention from International Relations scholars as an ongoing site of water resource conflict between India, Pakistan and China (see Davis et al. 2021 for a critical examination).

Vesco, Paola, Dasgupta, Shouro, De Cian, Enrica and Carraro, Carlo. "Natural resources and conflict: A meta-analysis of the empirical literature." *Ecological Economics* 172, 106633 (2020)

<https://doi.org/10.1016/j.ecolecon.2020.106633>

Levy, Barry, S. "Increasing Risks for Armed Conflict: Climate Change, Food and Water Insecurity, and Forced Displacement." *Int J Health Serv* 49, (2019):682–691. <https://doi.org/10.1177/0020731419845249>

Onuoha, Freedom, C., Ojewale, Oluwale, & Akogwu, Chukwunonso. "Climate Change and Natural Resource Conflict in ECOW AS and ECCAS Regions: Implications for State Security Forces." *African Journal on Conflict Resolution* 23, (2023):7–36. [doi:10.17159/ajcr.v23i2.17636](https://doi.org/10.17159/ajcr.v23i2.17636)

Davis, Alexander, E., Gamble, Ruth, Roche, Gerald, and Gawne, Lauren. "International relations and the Himalaya: connecting ecologies, cultures and geopolitics." *Australian Journal of International Affairs* 75, (2021):15–35. <https://doi.org/10.1080/10357718.2020.1787333>

<sup>28</sup> Based on the SIPRI 2023 Yearbook estimate of \$2240 billion USD (2021) for global military expenditure, we can compare with military spending prior to the two world wars. World military

to survive a nuclear blast – pouring billions of dollars into post-apocalyptic infrastructure<sup>29</sup>, for a reason. They are equipping their arsenals with missiles that can travel at hypersonic speed with multiple reentry vehicles; where a missile can evade radar detection until much later and deliver multiple warheads to several targets at once, making anti-missile defense nearly impossible. With the help of airborne command and control centers, we are even prepared to fly above the mushroom clouds and operate our militaries in the midst of nuclear war<sup>30</sup>. The risk of nuclear conflict is greater than any point during the Cold War. As of 2025, the Bulletin of Atomic Scientists' *Doomsday Clock* is set to 89 seconds to midnight, the closest to global catastrophe it has ever been<sup>31</sup>.

Since the Cold War, civilization has been in an ongoing state of planetary-scale, irregular warfare. As a result, it has occasionally seemed as if we had been relatively successful at curbing violence, and its historical cycles of bloody conflicts. However, today we are witnessing a resurgence of major power competition and preparation for large-scale conflict, taking place at

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expenditure in 1913 prior to WW1 was ~\$30B USD (1980). Adjusting to 2021, this is about \$98B USD, so current military spending is 2 orders of magnitude greater than pre-WW1 military buildup. Similarly, world military expenditure in 1938 (the year before WW2) was \$127B USD (1980), which is about \$418B USD (2021), still an order of magnitude less than current expenditure.

Ortiz-Opsina, E. (2018). *Long-run trends in military spending and personnel: four key facts from new data*. Our World in Data. <https://ourworldindata.org/military-long-run-spending-perspective>  
Sipri. *SIPRI Military Expenditure Database*. Sipri. <https://milex.sipri.org/sipri>  
World Military Expenditure. Arms and Armaments SIPRI Findings (1986). *Bulletin of Peace Proposals*, 17(3-4), 227-233. <https://doi.org/10.1177/096701068601700303>

<sup>29</sup> To-do: Billions for post-apocalyptic infrastructure/nuclear war infrastructure national spending ref?

<https://www.reuters.com/world/europe/polands-capital-warsaw-earmarks-30-mln-bomb-shelters-ot-her-security-2024-03-13/>

<https://apps.dtic.mil/sti/citations/tr/ADA560679>

30

The US Navy's E-6B Mercury Aircraft is commonly referred to as a "doomsday plane", as it is designed to serve as an airborne command post in the event of an all-out nuclear war, disaster or other large-scale conflict. It supports the US Navy's communication network between the White House and the United States' nuclear submarine fleet. Northrop Grumman was contracted in 2022 to deliver upgrades for 12 E-6B Mercury aircraft by 2027.

<https://www.navy.mil/Resources/Fact-Files/Display-FactFiles/Article/2162873/e-6b-mercury-airborne-command-post/>  
<https://interestingengineering.com/innovation/northrop-grumman-first-modified-e6b>

<sup>31</sup> Mecklin, J. (Ed.) (2023). *A moment of historic danger: It is still 90 seconds to midnight*. Bulletin of Atomic Scientists. <https://thebulletin.org/doomsday-clock/current-time/>

a time when there is more destructive and dystopian weaponry than at any point in history. As more nations gain nuclear capability, advanced technologies become widely distributed, and civilization passes critical ecological limits, the system of geopolitical power becomes increasingly unstable, competitions over resources and positions of political influence escalate, and the likelihood of globally catastrophic violence grows. An imminent sense of insecurity then drives us to create increasingly invasive systems of surveillance and control, posing the counter-risk of a high-tech, all-encompassing, planetary police state.

### **Global Security Trends**

Below is a selection of trends which point to increasing risk of catastrophic violence. Several of these are discussed at length throughout, while some, e.g., ecological overshoot, were discussed in previous chapters.

<b>Nuclear Instability</b>	<ul style="list-style-type: none"> <li>• Genuine nuclear multipolarity: nine nations possess nuclear weapons, four of them with the nuclear triad<sup>32</sup></li> <li>• The stability of Cold War nuclear policy is over. It depended on bipolar conflict<sup>33</sup>. Something comparably stable may no longer be possible<sup>34</sup>.</li> <li>• Nuclear systems continue to advance<sup>35</sup>, obsoleting previous missile defense strategies<sup>36</sup>.</li> <li>• Nuclear systems may be hacked via cyberattacks to falsely signal an attack which is not occurring, or hide a strike which is ongoing<sup>37</sup>.</li> </ul>
<b>Widely Distributed Advanced Technology</b>	<ul style="list-style-type: none"> <li>• Advanced technologies (e.g., AI) increase the speed, intensity, and consequentiality of major power competition and arms races<sup>38</sup></li> <li>• Decentralized catastrophe weapons empower non-state actors with a range of motivations and ideologies<sup>39</sup></li> </ul>

<sup>32</sup> Komarraju, R. (2023). Untangling the South Asia–China Nuclear Problematique. In A. Subramanyam Raju & R. Srinivasan (Eds.), *The Routledge Handbook of South Asia. Region, Security, and Connectivity* (Pp. 147-157). Routledge India.

Litwak, R. A Tripolar Nuclear World: Challenges to Strategic Stability. *The Washington Quarterly* 46, 143–158 (2023) <https://doi.org/10.1080/0163660X.2023.2286790>.

<sup>33</sup> Waltz, K. N. (1964). *The Stability of a Bipolar World*. *Daedalus* 93, 881–909.

<sup>34</sup> Legvold, R. & Chyba, C. F. (2020). *Introduction: The Search for Strategic Stability in a New Nuclear Era*. *Daedalus* 149, 6–16. [https://doi.org/10.1162/daed\\_e\\_01786](https://doi.org/10.1162/daed_e_01786)

<sup>35</sup> Kristensen, H. M., Korda, M., & Reynolds, E. (2023). Russian nuclear weapons, 2023. *Bulletin of the Atomic Scientists*, 79(3), 174–199. <https://doi.org/10.1080/00963402.2023.2202542>

Kristensen, H. M., & Korda, M. (2023). United States nuclear weapons, 2023. *Bulletin of the Atomic Scientists*, 79(1), 28–52. <https://doi.org/10.1080/00963402.2022.2156686>

Hans M. Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight, Chinese Nuclear Weapons, 2024, *Bulletin of the Atomic Scientists*, 80:1, 49-72, DOI: <https://doi.org/10.1080/00963402.2023.2295206>

<sup>36</sup> Sankaran, J. The Delusions and Dangers of Missile Defense. *Arms Control Today* 53, 6–10 (2023)

<sup>37</sup> Stoutland, P. O., Pitts-Kiefer, S., Moniz, E. J., Nunn, S. & Browne, D. Understanding the Cyber Threat to Nuclear Weapons and Related Systems. 9–20 (2018) <https://www.jstor.org/stable/resrep19983.6>  
Wilfred, W., Andraz, K. & Eleanor, K. The Cyber-Nuclear Nexus: Interactions and Risks. <https://www.unidir.org/cybernuclear> (2021) <https://doi.org/10.37559/WMD/21/NRR/03>

<sup>38</sup> Schmidt, E. AI, Great Power Competition & National Security. *Daedalus* 151, 288–298 (2022) [https://doi.org/10.1162/daed\\_a\\_01916](https://doi.org/10.1162/daed_a_01916)

<sup>39</sup> Beccaro, A. Non-state actors and modern technology. *Small Wars & Insurgencies* 34, 780–802 (2023) <https://doi.org/10.1080/09592318.2022.2104298>

	<ul style="list-style-type: none"> <li>• Makes safety via deterrence (threat of violence) less effective<sup>40</sup></li> <li>• It is not possible to predict where attacks will come from and how a conflict will escalate<sup>41</sup></li> <li>• Incentivizes Ubiquitous Surveillance and a Universal Police State</li> </ul>
<b>Ecological Overshoot</b>	<ul style="list-style-type: none"> <li>• More severe and frequent extreme weather events threaten national and international security<sup>42</sup></li> <li>• Refugee Crises are occurring at an unprecedented scale of displacement<sup>43</sup></li> <li>• The consequences of ecological overshoot are unevenly distributed to the most vulnerable populations<sup>44</sup></li> </ul>

<sup>40</sup> As explained by Shamir (2021), traditional deterrence theory has limited utility against violent non-state actors, requiring extensive revision and evolution to handle non-state threats.

Shamir, E. Deterring Violent Non-state Actors. in NL ARMS Netherlands Annual Review of Military Studies 2020 (eds. Osinga, F. & Sweijs, T.) 263–286 (T.M.C. Asser Press, The Hague, 2021). doi:10.1007/978-94-6265-419-8\_14 [https://doi.org/10.1007/978-94-6265-419-8\\_14](https://doi.org/10.1007/978-94-6265-419-8_14)

<sup>41</sup> New technologies have introduced fundamental changes to how weapon systems are deployed, radically increasing uncertainty of deterrence.

Timbie, J., Ellis O.J., Technology, Complexity, Uncertainty, and Deterrence (2023) Henry Kissinger Center for Global Affairs  
<https://sais.jhu.edu/kissinger/programs-and-projects/kissinger-center-papers/technology-complexity-uncertainty-and-deterrence>

<sup>42</sup> Davies, K. & Riddell, T. The Warming War: How Climate Change Is Creating Threats to International Peace and Security. Geo. Envtl. L. Rev. 30, 47 (2017).

Bauer, S. Stormy Weather: International Security in the Shadow of Climate Change. in Coping with Global Environmental Change, Disasters and Security: Threats, Challenges, Vulnerabilities and Risks (eds. Brauch, H. G. et al.) 719–733 (Springer, Berlin, Heidelberg, 2011). doi:10.1007/978-3-642-17776-7\_41 [https://doi.org/10.1007/978-3-642-17776-7\\_41](https://doi.org/10.1007/978-3-642-17776-7_41).

McElroy, M. B. & Baker, D. J. Climate Extremes: Recent Trends with Implications for National Security. Vt. J. Envtl. L. 15, 727 (2013)

<sup>43</sup> Suarez-Orozco, M. Humanitarianism and Mass Migration: Confronting the World Crisis. (Univ of California Press, 2019)

<sup>44</sup> Faus Onbargi, A. The climate change – inequality nexus: towards environmental and socio-ecological inequalities with a focus on human capabilities. Journal of Integrative Environmental Sciences 19, 163–170 (2022) <https://doi.org/10.1080/1943815X.2022.2131828>

Hamann, M. et al. Inequality and the Biosphere. Annual Review of Environment and Resources 43, 61–83 (2018) <https://doi.org/10.1146/annurev-environ-102017-025949>

Fanning, A. L., O'Neill, D. W., Hickel, J. & Roux, N. The social shortfall and ecological overshoot of nations. Nat Sustain 5, 26–36 (2022) <https://doi.org/10.1038/s41893-021-00799-z>

	<ul style="list-style-type: none"> <li>• We are reaching limits to economic growth, risking resource conflict<sup>45</sup></li> </ul>
<b>Population Radicalization</b>	<ul style="list-style-type: none"> <li>• More groups are willing to engage in violence as a result of: <ul style="list-style-type: none"> <li>○ The Externalities of Proxy and Irregular Warfare<sup>46</sup></li> <li>○ Increases in Economic and Political inequality<sup>47</sup></li> <li>○ Intensifying Polarization and Political Violence<sup>48</sup></li> <li>○ Ongoing Information and Population-centric warfare<sup>49</sup></li> <li>○ Continuous Algorithmic Radicalization via social media<sup>50</sup></li> </ul> </li> </ul>

Box 1

<sup>45</sup>McBain, B., Lenzen, M., Wackernagel, M. & Albrecht, G. How long can global ecological overshoot last? *Global and Planetary Change* 155, 13–19 (2017) <https://doi.org/10.1016/j.gloplacha.2017.06.002>  
Environmental Conflicts, Migration and Governance. (Bristol University Press, Bristol, 2020)

<sup>46</sup> Balcells & Kalyvas (2014) found that irregular conflicts generate greater civilian victimization, and Aliyev (2019) also found that extra-state proxies in civil wars increase collateral lethality.

Balcells, L. & Kalyvas, S. N. Does Warfare Matter? Severity, Duration, and Outcomes of Civil Wars. *Journal of Conflict Resolution* 58, 1390–1418 (2014) <https://doi.org/10.1177/0022002714547903>.  
Aliyev, H. Why Are Some Civil Wars More Lethal Than Others? The Effect of Pro-Regime Proxies on Conflict Lethality. *Political Studies* 68, 749–767 (2020) <https://doi.org/10.1177/0032321719862752>.

<sup>47</sup> Perceived socio-political inequality has been found to correlate most strongly with radicalization and terrorism than other measures of inequality, including objective economic inequality which show inconsistent and context-dependent effects. A few studies have found correlation between perceived economic inequality and radicalization.

Franc, R. & Pavlović, T. Inequality and Radicalisation: Systematic Review of Quantitative Studies. *Terrorism and Political Violence* 35, 785–810 (2023) <https://doi.org/10.1080/09546553.2021.1974845>

<sup>48</sup>Herschinger, E., Bozay, K., Drachenfels, M. von, Decker, O. & Joppke, C. A Threat to Open Societies? Conceptualizing the Radicalization of Society. *International Journal of Conflict and Violence (IJCV)* 14, 1–16 (2020) <https://doi.org/10.4119/ijcv-3807>  
Østby, G. Polarization, Horizontal Inequalities and Violent Civil Conflict. *Journal of Peace Research* 45, 143–162 (2008) <https://doi.org/10.1177/0022343307087169>  
Müller-Crepon, C. Local ethno-political polarization and election violence in majoritarian vs. proportional systems. *Journal of Peace Research* 59, 242–258 (2022) <https://doi.org/10.1177/0022343320973724>

<sup>49</sup>Taylor, P. M. *Munitions of the Mind: A History of Propaganda* (3rd Ed.). (Manchester University Press, 2003)  
[https://www.army.mil/article/32362/a\\_strategy\\_of\\_tactics\\_population\\_centric\\_coins\\_and\\_the\\_army](https://www.army.mil/article/32362/a_strategy_of_tactics_population_centric_coins_and_the_army)

<sup>50</sup> Hollewell, G. F. & Longpré, N. Radicalization in the Social Media Era: Understanding the Relationship between Self-Radicalization and the Internet. *Int J Offender Ther Comp Criminol* 66, 896–913 (2022) <https://doi.org/10.1177/0306624X211028771>



## **The Fallout of Irregular Warfare**

The existence of world-ending weaponry and asymmetric military forces brought about a shift from primarily engaging in conventional forms of violence to the use of irregular tactics (see box 2). At first this was primarily driven by the US and USSR seeking to weaken one another without engaging in direct kinetic warfare. Conventional tactics were enveloped within a broader strategy of economic and financial coercion, political interference and regime change, espionage, intelligence gathering, proxy-conflict, insurgency, terrorism, cyber-attacks, and information and population centric warfare. In parallel, smaller nations and non-state actors (e.g., in Vietnam and Afghanistan) were also innovating in irregular tactics in order to contend with these more powerful, nuclear-armed militaries (often in the midst of the proxy wars taking place between them). By means of insurgency, guerilla warfare, and decentralized organization, these groups were able to drive up the economic and political costs of war too high for major powers to bear, forcing withdrawal.

Irregular warfare is not totally unprecedented. As long as humans have fought, military tactics have involved means such as disrupting an enemies economy by cutting off their supply chains, or undermining their political system with propaganda and misinformation. What is novel is the scale of irregular conflict and the power of technologies being used. It is not an overstatement to say that the entire world system has been pulled into and affected by unrestricted warfare. The battlefield is everywhere, very few aspects of the human experience are left unscathed, and the “casualties” are highly consequential without always being immediately obvious. Where Sun Tzu and other historical masters of war worked largely at the local level (up to multi-continent empires), today state and non-state actors are running more advanced strategies at truly global scale. The reality of planetary-scale, ubiquitous, unrestricted warfare is that humanity is in a state of perpetual war. There has been an end to the notion of “peace-time.” The conditions of nearly all of civilization are partially influenced by large-scale coordinated warfare.

## Tactics of Irregular Warfare

Warfare is often divided into two broad categories, given many names: Regular and Irregular,<sup>51</sup> Conventional and Unconventional, Restricted and Unrestricted.<sup>52</sup> The meaning of these terms somewhat overlap and blend together, but they all point to an ancient distinction in the art of war: the difference between a war that seeks to directly defeat an enemy's armed forces in battle vs one which indirectly undermines their political will to fight and uses any means necessary to force them to submit to one's interests. The list offered below is by no means exhaustive. Nor is each strategy used in isolation. Rather, they are combined and coordinated in orchestrated irregular campaigns (both proxy and cyberwarfare, e.g., are employed as subcomponents in economic warfare).<sup>53</sup>

- Assassination<sup>54</sup>: the deliberate killing of enemy leaders to seize power, start a revolution, or implement a new regime (e.g., by means of poison<sup>55</sup> or remotely piloted drones<sup>56</sup> which enable assassination at a distance with no human mediation).

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<sup>51</sup> Kitzen, M. Operations in Irregular Warfare. in Handbook of Military Sciences (ed. Sookermany, A. M.) 1–21 (Springer International Publishing, Cham, 2020). doi:10.1007/978-3-030-02866-4\_81-1 [https://doi.org/10.1007/978-3-030-02866-4\\_81-1](https://doi.org/10.1007/978-3-030-02866-4_81-1)

Department of Defense. (2020). *Summary of the Irregular Warfare Annex to the National Defense Strategy*. Department of Defense. <https://media.defense.gov/2020/Oct/02/2002510472/-1/-1/0/Irregular-Warfare-Annex-to-the-National-Defense-Strategy-Summary.PDF>

<sup>52</sup> Department of Defense. (2014). *Directive*. Department of Defense. <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/300007p.pdf?ver=2019-02-04-124731-573>

Barno, D., Bensahel, N. (2016) *A New Generation of Unrestricted Warfare*. Texas National Security Review. <https://warontherocks.com/2016/04/a-new-generation-of-unrestricted-warfare/>

<sup>53</sup> Warfare has also been divided into distinct 'generations.' These generations signal a qualitative shift, where absent a vast disparity in size, an army from a previous generation cannot beat a force from the new generation. The literature indicates four definitive generations, and an emerging fifth generation. Lind, W.S., Nightengale, K., Schmitt, J.F., Sutton, J.W., & Wilson, G.I. (1989). *The Changing Face of War: Into the Fourth Generation*. Marine Corps Gazette. Hammes, T. (2004). *The Sling and the Stone: On War in the 21st Century*. Zenith Press. Reed D. J. (2008). Beyond the War on Terror: Into the Fifth Generation of War and Conflict, *Studies in Conflict & Terrorism*. 31:8, 684-722, DOI: 10.1080/10576100802206533

<sup>54</sup> Pratt, S. F. Crossing off names: the logic of military assassination. *Small Wars & Insurgencies* 26, 3–24 (2015) <https://doi.org/10.1080/09592318.2014.959769>

<sup>55</sup> Chai, P. R., Boyer, E. W., Al-Nahhas, H. & Erickson, T. B. Toxic chemical weapons of assassination and warfare: nerve agents VX and sarin. *Toxicology Communications* 1, 21–23 (2017)

<sup>56</sup> Scahill, J. & Intercept, T. S. of T. *The Assassination Complex: Inside the Government's Secret Drone Warfare Program*. (Simon and Schuster, 2017)

- *Cyber Warfare*<sup>57</sup>: cyberattacks upon critical systems dependent upon digital technology – physical infrastructure<sup>58</sup>, financial institutions<sup>59</sup>, weapons systems<sup>60</sup>, intellectual property<sup>61</sup>, intelligence gathering<sup>62</sup>.
- *Diplomatic Warfare*: Strategic and coercive diplomatic methods aimed at undermining the adversary's position, for example, by sowing dissent amongst allies, deceiving, and/or securing agreements only to backtrack on commitments.<sup>63</sup>
- *Environmental Warfare*<sup>64</sup>: manipulating the enemy's environment: intentional chemical

<sup>57</sup> Applegate, S. Cybermilitias and Political Hackers: Use of Irregular Forces in Cyberwarfare. IEEE Security & Privacy 9, 16–22 (2011) <https://doi.org/10.1109/MSP.2011.46>

Whyte, C. & Mazanec, B. Understanding Cyber-Warfare: Politics, Policy and Strategy. (Routledge, London, 2023). <https://doi.org/10.4324/9781003246398>

<sup>58</sup> Stoddart, K. On Cyberwar: Theorizing Cyberwarfare Through Attacks on Critical Infrastructure—Reality, Potential, and Debates. in Cyberwarfare: Threats to Critical Infrastructure (ed. Stoddart, K.) 53–146 (Springer International Publishing, Cham, 2022). [https://doi.org/10.1007/978-3-030-97299-8\\_2](https://doi.org/10.1007/978-3-030-97299-8_2)

<sup>59</sup> Zarate, Juan C. "The Cyber Financial Wars on the Horizon." Foundation for the Defense of Democracies (2015) <https://www.fdd.org/analysis/2015/07/07/the-cyber-financial-wars-on-the-horizon/>  
Khan, S. R. Implication of Cyber Warfare on the Financial Sector. An Exploratory Study. International Journal of Cyber-Security and Digital Forensics 7, 31–38 (2018)  
[https://www.researchgate.net/publication/323574073\\_Implication\\_of\\_Cyber\\_Warfare\\_on\\_the\\_Financial\\_Sector\\_An\\_Exploratory\\_Study](https://www.researchgate.net/publication/323574073_Implication_of_Cyber_Warfare_on_the_Financial_Sector_An_Exploratory_Study)

<sup>60</sup> Spector, L. Cyber Offense and a Changing Strategic Paradigm. The Washington Quarterly 45, 38–56 (2022) <https://doi.org/10.1080/0163660X.2022.2054123>

<sup>61</sup> Taplin, R. Cyber Risk, Intellectual Property Theft and Cyberwarfare: Asia, Europe and the USA. (Routledge, London, 2020). doi:10.4324/9780429453199 <https://doi.org/10.4324/9780429453199>

<sup>62</sup> Gilad, A., Pecht, E. & Tishler, A. Intelligence, Cyberspace, and National Security. Defence and Peace Economics 32, 18–45 (2021) <https://doi.org/10.1080/10242694.2020.1778966>

<https://www.govexec.com/oversight/2024/04/russian-hackers-accessed-us-government-emails-microsoft-breach-cisa-says/395695/>

<sup>63</sup> Codevilla, Angelo. *Tools of Statecraft: Diplomacy and War*. (2008). FPRI.  
<https://www.fpri.org/article/2008/01/tools-of-statecraft-diplomacy-and-war/>

<sup>64</sup> Jensen, E. (2005). *The International Law of Environmental Warfare: Active and Passive Damage During Armed Conflict*. Vanderbilt Journal of Transnational Law. 38(1). <https://scholarship.law.vanderbilt.edu/vjtl/vol38/iss1/4>  
<https://scholarship.law.vanderbilt.edu/cgi/viewcontent.cgi?article=1522&context=vjtl#:~:text=Active%20environmental%20warfare%20includes%20inducing,or%20to%20destroy%20enemy%20forces>

pollution<sup>65</sup>, poisoning water,<sup>66</sup> causing forest fires<sup>67</sup>, using insects for bioterrorism and crop

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<sup>65</sup> Military action against chemical plants and installations, and the dual-use potential of industrial chemicals introduces the possibility of “toxic warfare”, or “chemical warfare without chemical weapons”. The Gulf War saw Iraq deliberately spill 2 - 3 million barrels of oil into the Persian Gulf in 1991 (Ross, 1992).

Hincal, Filiz, and Pinar Erkekoglu. "Toxic industrial chemicals (TICs)-chemical warfare without chemical weapons." *FABAD Journal of Pharmaceutical Sciences* 31.4 (2006): 220.  
Ross, Marc A. "Environmental warfare and the Persian Gulf War: Possible remedies to combat intentional destruction of the environment." *Dick. J. Int'l L.* 10 (1991): 515.  
<https://heinonline.org/HOL/LandingPage?handle=hein.journals/psilr10&div=28&id=&page=>

<sup>66</sup> The weaponization of water in conflict dates back to some of the earliest military conflicts, and includes strategies such as damaging or poisoning water supplies, diverting and destroying irrigation canals, flooding lands, cutting off river flows, strategic construction and destruction of dams, etc. King (2015) comprehensively documents the weaponization of water in Syria and Iraq. See the Water Conflict Chronology by the Pacific Institute (2024) for a comprehensive list of water conflicts and cases of weaponization:

King, M. D. The Weaponization of Water in Syria and Iraq. *The Washington Quarterly* 38, 153–169 (2015)  
<https://doi.org/10.1080/0163660X.2015.1125835>

<https://www.worldwater.org/conflict/list/>

<sup>67</sup> Fire has been utilized as a weapon of war on a number of occasions, including the Vietnam War and “terrain denial fires” in Afghanistan. Military activity also generally drives increased fire risk, as observed in Ukraine (Matsala et al. 2024)

<https://lieber.westpoint.edu/terrain-denial-fires-modern-battlefield/>  
Chandler & Bentley (1970) *Forest Fire as a Military Weapon*, Forest Service, Washington DC.  
<https://apps.dtic.mil/sti/citations/tr/AD0509724>  
Matsala, M. et al. War drives forest fire risks and highlights the need for more ecologically-sound forest management in post-war Ukraine. *Sci Rep* 14, 4131 (2024) <https://doi.org/10.1038/s41598-024-54811-5>

destruction<sup>68</sup>, altering weather via cloud seeding<sup>69</sup>, inducing earthquakes or other disasters<sup>70</sup>.

- *Espionage*<sup>71</sup>: the process of obtaining classified information (military, economic, political, or technological) from an adversary by means of spying, surveillance, or cyberoperations.
- *Financial Warfare*<sup>72</sup>: the use of financial means such as embargoes, boycotts, sanctions, tariffs, asset freezing, aid suspension,<sup>73</sup> commodities gouging (e.g., lowering or raising the

<sup>68</sup> Lockwood, J. A. Insects as Weapons of War, Terror, and Torture. *Annual Review of Entomology* 57, 205–227 (2012) <https://doi.org/10.1146/annurev-ento-120710-100618>

<sup>69</sup> The US, China, Russia, Middle East and Europe all have varying degrees of weather modification programmes via cloud seeding. Although there is historical precedence for militarization of cloud seeding as in Project Popeye during the Vietnam War (Fleming, 2010), the Environmental Modification Convention (ENMOD) treaty prohibits the military use of environmental modification (including weather modification) techniques. This being said, there are emerging security concerns around cloud seeding programs, particularly in east Asia (Shevchenko, 2021).

Fleming, J. R. *Fixing the Sky : The Checkered History of Weather and Climate Control*. (New York : Columbia University Press, 2010)

Shevchenko, O. & Horiacheva, K. Impact of Weather Change Technologies on Global Security. *Land Forces Academy Review* 26, 321–327 (2021) <https://doi.org/10.2478/raft-2021-0042>

See also:

Harper, K. C. Climate control: United States weather modification in the cold war and beyond. *Endeavour* 32, 20–26 (2008) <https://doi.org/10.1016/j.endeavour.2008.01.006>.

Petrinin, A. M., Dvoeglazov, S. M., Platonov, N. A. & Antonov, S. V. Trends in the development of technical means on weather modification of clouds and supercooled fog. *IOP Conf. Ser.: Earth Environ. Sci.* 840, 012033 (2021) <https://doi.org/10.1088/1755-1315/840/1/012033>

<https://thediomat.com/2023/01/how-china-uses-geoengineering-to-pursue-a-hybrid-warfare-strategy/>

<sup>70</sup> Tectonic weapons are hypothetical devices that could trigger earthquakes, volcanic eruptions or other seismic events. Although no such specifically designed weapons are known to exist, nuclear weapons can trigger small earthquakes. A “tsunami bomb” has also previously been deemed possible.

<https://www.usgs.gov/faqs/can-nuclear-explosions-cause-earthquakes>

<https://www.nzherald.co.nz/nz/devastating-tsunami-bomb-viable-say-experts/DUQDTFM73THVBHAKU5OUQHMACA/>

<sup>71</sup> Pun, D. Rethinking Espionage in the Modern Era. *Chi. J. Int'l L.* 18, [i]-392 (2017)

Devanny, J., Martin, C. & Stevens, T. On the strategic consequences of digital espionage. *Journal of Cyber Policy* 6, 429–450 (2021) <https://doi.org/10.1080/23738871.2021.2000628>

<sup>72</sup> Clemens, J. An Analysis of Economic Warfare. *American Economic Review* 103, 523–527 (2013) <https://doi.org/10.1257/aer.103.3.523>.

Hagemeyer-Witzleb, T. M. *The International Law of Economic Warfare*. vol. 16 (Springer International Publishing, Cham, 2021). <https://doi.org/10.1007/978-3-030-72846-5>

<sup>73</sup> See Chapter 1 from Hagemeyer-Witzleb (2021) for a full definition of economic warfare and key terms.

Hagemeyer-Witzleb, T. M. Key Terms, Concepts, and Course of Inquiry. in *The International Law of Economic Warfare* (ed. Hagemeyer-Witzleb, T. M.) 13–50 (Springer International Publishing, Cham, 2021). doi:10.1007/978-3-030-72846-5\_2 [https://doi.org/10.1007/978-3-030-72846-5\\_2](https://doi.org/10.1007/978-3-030-72846-5_2)

cost of oil), currency manipulation, cutting off access to financial infrastructure (e.g., SWIFT) to weaken another state's economy (and thus its political and military power), to compel policy change, or to undermine geopolitical relations<sup>74</sup>.

- Insurgency<sup>75</sup>: armed resistance to a government below the level of an organized revolution. Insurgents will often use tactics such as kidnapping<sup>76</sup>, bombing<sup>77</sup>, hostage-taking<sup>78</sup>, and hijacking<sup>79</sup>, to compensate for their inability to defeat an adversary in direct combat.
- Population-Centric Warfare<sup>80</sup>: targets the mind and culture of the enemy; campaigns are devised and deployed to sow seeds of internal dissension and confusion, fragmenting culture, causing a group to internally implode.
- Proxy Warfare<sup>81</sup>: third parties directly or indirectly cause or support one side in a conflict typically through the use of military aid, training, and weapons. By fighting at a distance, outside parties are more willing to increase the frequency and deadliness of proxy conflicts.

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<sup>74</sup> Farrell, H. & Newman, A. L. Weaponized Interdependence: How Global Economic Networks Shape State Coercion. *International Security* 44, 42–79 (2019) [https://doi.org/10.1162/isec\\_a\\_00351](https://doi.org/10.1162/isec_a_00351)

<sup>75</sup> O'Neill, B. E. *Insurgency in the Modern World*. (Routledge, 2019)

<sup>76</sup> Avdan, N. & Omelicheva, M. Human Trafficking-Terrorism Nexus: When Violent Non-State Actors Engage in the Modern-Day Slavery. *Journal of Conflict Resolution* 65, 1576–1606 (2021) <https://doi.org/10.1177/00220027211010904>

<sup>77</sup> Gul, A. (2024). *Insurgents kidnap, kill 11 travelers in southwestern Pakistan*. VOA. <https://www.voanews.com/a/insurgents-kidnap-kill-11-travelers-in-southwestern-pakistan/7568222.html>

<sup>78</sup> CIA. (2011). GUIDE TO THE ANALYSIS OF INSURGENCY. CIA. <https://www.cia.gov/readingroom/docs/CIA-RDP87T01127R000300220005-6.pdf>

<sup>79</sup> Fritz, W. P. (2004). Human Leverage: Hostage-taking as a Tactic in Insurgency. Defense Technical Information Center. <https://apps.dtic.mil/sti/citations/ADA504556>

<sup>80</sup> Dryad Global. (2023). Metis Insights: Houthi Hijacking in the Red Sea. Dryad Global. <https://channel16.dryadglobal.com/metis-insights-houthi-hijacking-in-the-red-sea>

<sup>81</sup> Marks, T. A., Gorka, S. L. v. & Sharp, R. Getting the Next War Right: Beyond Population-centric Warfare. *PRISM* 1, 79–98 (2010)

Gentile, G. P. A Strategy of Tactics: Population-centric COIN and the Army. *The US Army War College Quarterly: Parameters* 39, (2009) <https://doi.org/10.55540/0031-1723.2485>

<sup>81</sup> Mumford, A. Proxy Warfare and the Future of Conflict. *The RUSI Journal* 158, 40–46 (2013) <https://doi.org/10.1080/03071847.2013.787733>.

Rauta, V. Proxy Warfare and the Future of Conflict: Take Two. *The RUSI Journal* 165, 1–10 (2020) <https://doi.org/10.1080/03071847.2020.1736437>.



- Regime Change<sup>82</sup>: overthrowing a government by means of regular or irregular tactics and implementing a new one, more favorable to the party orchestrating the overthrow's particular strategic interests.
- Supply Chain Warfare<sup>83</sup>: hindering your adversary's ability to obtain critical resources or commercial products (such as uranium, rare earth minerals<sup>84</sup> or semiconductors<sup>85</sup>), for example by strategically purchasing land, refinery, ports, and/or through sanctions.

Box 2

Directing attention towards an apparent decrease in conventional warfare between major powers has diverted focus from the escalation in intensity, scope, and impact of unrestricted conflict. Harms from an irregular war are often subtle forms of societal erosion as opposed to a direct body count. A useful analogy here is the medical distinction between morbidity and mortality. The consequences of unrestricted warfare look more like an increasingly morbid civilization – one which is disease ridden but not yet dead. A successful irregular campaign, for instance, might leave the enemy's population with unbound economic inequality, rampant political corruption, and widespread drug addiction. And, of course, such tactics are vastly more effective when they leave no trace of being an act of war in the first place.

<sup>82</sup> Walzer, M. Regime Change and Just War. *Dissent* 53, 103–108 (2006).

Escribà-Folch, A. & Wright, J. Military Intervention and Regime Change. in *Foreign Pressure and the Politics of Autocratic Survival* (eds. Escribà-Folch, A. & Wright, J.) 0 (Oxford University Press, 2015).  
<https://doi.org/10.1093/acprof:oso/9780198746997.003.0008>

Denison, Benjamin. "The More Things Change, the More They Stay the Same: The Failure of Regime Change." Policy Analysis No. 883, Cato Institute, Washington, DC, January 6, 2020.

<https://www.cato.org/policy-analysis/more-things-change-more-they-stay-same-failure-regime-change-operations>

<sup>83</sup> Layton, P. Systematizing Supply Chain Warfare. *Æther: A Journal of Strategic Airpower & Spacepower* 2, 62–80 (2023)

Phillips-Levine, T. The Art of Supply Chain Interdiction: To Win Without Fighting. *War on the Rocks*. (2023) <https://warontherocks.com/2023/05/the-art-of-supply-chain-interdiction-to-win-without-fighting/>

<sup>84</sup> Hansen, T. Securing U.S. Access to Rare Earth Elements. *Defense360* (2020).

[https://defense360.csis.org/wp-content/uploads/2020/03/Hansen\\_Rare-Earth\\_v1.pdf](https://defense360.csis.org/wp-content/uploads/2020/03/Hansen_Rare-Earth_v1.pdf)

Carpenter, R. P. The Bottom of the Smart Weapon Production Chain: Securing the Supply of Rare Earth Elements for the U.S. Military. *Pub. Cont. L.J.* 41, 411 (2011)

<https://heinonline.org/HOL/LandingPage?handle=hein.journals/pubclj41&div=23&id=&page=>

<sup>85</sup> Bradley et al. Supply Chain Interdependence and Geopolitical Vulnerability The Case of Taiwan and High-End Semiconductors. RAND Corp Santa Monica (2023)

<https://apps.dtic.mil/sti/citations/trecms/AD1195673>

Now this is not to say that direct casualties have not played a role in the last 80 years of irregular conflict. The brunt of the death toll has just mostly been borne by those in South America, South East Asia, the Middle East, Eastern Europe, and Africa – all caught in the midst of proxy war. From 2001 to 2024 there has been a 304% increase in violent events, and a 208% increase in fatalities, in intra- and inter-state conflict<sup>86</sup>. Nearly all of these (e.g., in the Eastern Congo, Mali, Somalia, Colombia, Afghanistan, Northern Pakistan, Libya, Syria, Yemen, and the Ukraine) involve larger powers (the US, Britain, France, Saudi Arabia, Israel, Iran, Russia, or China) who provide military aid, weapons, training, and logistical support to their group of choice. State and non-state actors fighting in regional wars have become strategic investments – *irregular assets* – in the portfolios of major powers.

It is not uncommon in proxy warfare for aid to be provided to a group whose interests overlap with a state's for a short period of time but which eventually diverge. Once a rebel group or “freedom fighter” is no longer useful, they may just as easily be classified as a terrorist<sup>87</sup>. This then requires further military engagement, justifies increases in defense spending and perpetuates the cycle of violence and the associated accumulation of profits and power.<sup>88</sup> When a state funds another actor to support their interests, they are exploiting a strategic loophole: the ability to move their agenda forward at a distance, with the possibility to pull out when it does not suit them, all the while maintaining plausible deniability for the harms caused by their

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<sup>86</sup> Based on Armed Conflict Location & Event Data Project (ACLED) from 01/01/2000 - 01/01/2024, percentage calculated by comparing the latest four weeks of selected events to the monthly (four-week) average for the selected time period. Violent events include armed clashes, non-state and government territory takeovers, violence against civilians, remote violence & explosions and riots.

<https://acleddata.com/dashboard/#/dashboard>

<sup>87</sup> For example, former Egyptian president Hosni Mubarak commented that at one point in time, Osama bin Laden was an “American hero.” MEMRI. (2001). An Interview with President Mubarak. MEMRI. [https://www.memri.org/reports/interview-president-mubarak#\\_edn1](https://www.memri.org/reports/interview-president-mubarak#_edn1)

Ronald Reagan met with leaders of the Afghan Mujahideen in 1983. Osama bin Laden was trained and radicalized by the Mujahideen.

<https://www.alamy.com/us-president-ronald-reagan-meets-with-leaders-of-the-afghan-mujahideen-in-the-oval-office-in-1983-image257466666.html>

<https://doi.org/10.1080/10576100390211400>

<https://clinton.presidentiallibraries.us/ubl-alqauida>

An example of the reverse occurring is that Nelson Mandela's name was on the United States' terrorists list until 2013. <https://www.ecchr.eu/en/publication/my-terrorists-your-terrorists/>

<sup>88</sup> Aldrich, R. (2002). *America used Islamists to arm the Bosnian Muslims*. The Guardian. <https://www.theguardian.com/world/2002/apr/22/warcrimes.comment>

proxies and lowering risk of backlash from the international community<sup>89</sup>. Who is responsible for a humanitarian atrocity or war crime, the rogue rebel group who pulls the trigger or anyone who has ever given them capital, weapons, or training? In unrestricted warfare this ambiguity is viewed as a strategic opportunity, capitalized upon by states who employ non-state actors (including terrorist networks<sup>90</sup>, private security corporations<sup>91</sup>, and international criminal organizations<sup>92</sup>) to achieve their ends.

The prevalence of private security and military corporations (PSMCs) has skyrocketed within recent years<sup>93</sup>. Major powers may make use of PSMCs as much or more than their own militaries. Between one-third to one-half of \$14 trillion dollars spent by the Pentagon since the war in Afghanistan went to military contractors<sup>94</sup>. In 2007 during the US-Iraq war, there were around 160,000 private contractors employed in Iraq, roughly equivalent to the number of official US troops there at the time<sup>95</sup>. PSMCs such as Academi (formerly known as Blackwater) or the Wagner group are used by major powers to aid in every dimension of warfare: combat, guarding and protection, detention and interrogation, wargaming, field training, logistics, propaganda campaigns, mission critical support, and post-invasion occupation. One of the many benefits of hiring a PSMC is that they operate with a great deal of legal ambiguity. Some of the worst war crimes in recent history have been carried out by military contractors, but prosecution is difficult

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<sup>89</sup> San-Akca, B. *States in Disguise: Causes of State Support for Rebel Groups*. (Oxford University Press, 2016)

<sup>90</sup> Byman, D. Understanding, and Misunderstanding, State Sponsorship of Terrorism. *Studies in Conflict & Terrorism* 45, 1031–1049 (2022) <https://doi.org/10.1080/1057610X.2020.1738682>

<sup>91</sup> The US, Russia and China all employ private military corporations extensively for military operations.

Mahoney, C. W. United States defence contractors and the future of military operations. *Defense & Security Analysis* 36, 180–200 (2020) <https://doi.org/10.1080/14751798.2020.1750182>

Spearin, C. China's Private Military and Security Companies: 'Chinese Muscle' and the Reasons for U.S. Engagement. *PRISM* 8, 40–53 (2020) <https://www.jstor.org/stable/26918233>

Østensen, Å. G. & Bukkvoll, T. Private military companies – Russian great power politics on the cheap? *Small Wars & Insurgencies* 33, 130–151 (2022) <https://doi.org/10.1080/09592318.2021.1984709>

<sup>92</sup> Decoeur, H. The Phenomenon of State Organized Crime. in *Confronting the Shadow State: An International Law Perspective on State Organized Crime* (ed. Decoeur, H.) 0 (Oxford University Press, 2018). doi:10.1093/oso/9780198823933.003.0002 <https://doi.org/10.1093/oso/9780198823933.003.0002>

<https://www.transparency.org/en/press/2022-corruption-perceptions-index-cycle-corruption-organised-crime-instability-americas>

<sup>93</sup> The Business of War – Growing risks from Private Military Companies. Analysis and Research Team, Council of the European Union General Secretariat. (2023)

<https://www.consilium.europa.eu/media/66700/private-military-companies-final-31-august.pdf>

<sup>94</sup> Hartung, W. Profits of War: Corporate Beneficiaries of the Post-9/11 Pentagon Spending Surge. *Costs of War*, Center for International Policy (2021).

<https://watson.brown.edu/costsofwar/papers/2021/ProfitsOfWar>

<sup>95</sup> Engelhardt, T. (2014). *Shadow Government*. Haymarket Books.

and rare as the international legal status of PSMCs remains unclear<sup>96</sup>. They may be granted certain forms of legal immunity by the state they are employed within, and pose little liability to the foreign government enlisting their services. When things go wrong, the state can displace a great deal of the responsibility and repercussions to the company. Governments are also not PSMCs' only customers. Whoever has sufficient funds can make use of their elite military forces for any purpose imaginable while remaining in a legal gray zone with minimal accountability.

International criminal organizations (ICOs) are another non-state actor that can be engaged in service to state interests. ICOs exist within the illicit economy of cybercrime (e.g., ransomware), financial extortion, and drug, weapons, and human trafficking. They operate with paramilitary forces who rival the militaries of small nations and police in terms of power. In 2017 ICOs killed about as many people as the combined death tolls of all other armed conflicts around the world<sup>97</sup>. States may see strategic value in an ICOs' activities even if they are not willing to explicitly engage in them. For example, a nation may turn a blind eye to its cybercriminals if their attacks weaken an adversary<sup>98</sup>. Or they may offer direct or indirect support for drug trafficking with the knowledge that it will poison the enemy's population; for example, selling the chemical precursors of fentanyl to Mexican cartels who then produce and traffic the drug across the US border<sup>99</sup>. Fentanyl overdoses accounted for *112,000 preventable deaths in a single year* in the

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<sup>96</sup> Hoppe, C. (2008). *Passing the Buck: State Responsibility for Private Military Companies*. *European Journal of International Law*. Volume 19, Issue 5, Pages 989–1014. <https://doi.org/10.1093/ejil/chn074>

<sup>97</sup> United Nations Office on Drugs and Crime. Global Study on Homicide.

<https://www.unodc.org/documents/data-and-analysis/gsh/Booklet1.pdf>

<sup>98</sup> This a known phenomena for Russia, for example see

<https://foreignpolicy.com/2021/11/09/cyberattacks-russia-responsibility-ransomware/>

<https://apnews.com/article/business-technology-general-news-government-and-politics-c9dab7eb3841be45dff2d93ed3102999>

<https://carnegieendowment.org/2018/02/02/why-russian-government-turns-blind-eye-to-cybercriminals-pub-75499>

<sup>99</sup> An indictment has been brought against a China based chemical manufacturing company for doing exactly this. While no judgment has been issued yet, there is strong reason to believe this is occurring. In addition, Iran is likely involved in a global drug trafficking network that targets Western countries. Office of Public Affairs. (2023). *Justice Department Announces Charges Against China-Based Chemical Manufacturing Companies and Arrests of Executives in Fentanyl Manufacturing*. U.S. Department of Justice.

<https://www.justice.gov/opa/pr/justice-department-announces-charges-against-china-based-chemical-manufacturing-companies>

Hajizade, A. (2018). *How the Iranian regime allows drug trafficking for foreign currency liquidity*. Alarabiya News.

<https://english.alarabiya.net/features/2018/08/16/How-the-Iranian-regime-allows-drug-trafficking-for-foreign-currency-liquidity->

Add content on Iran doing similar. See if we can find example of US doing it in opium wars

US in 2023<sup>100</sup> – in comparison, during the Vietnam war there were around *58,000 US military casualties occurring over the span of a decade*, from 1964-75<sup>101</sup>.

Indirect casualties in irregular conflict have characteristically blurry lines of responsibility and harm attribution, and the strategic targets are not limited to military personnel<sup>102</sup>. The battlefield has continuously moved further and further into civilian territory. Everyday citizens (including children) and basic social structures are equally as likely to become targets in broader efforts to create political instability.

The motivation towards violence did not evaporate when major powers realized they had to avoid total war with one another. They just sublimated it into unconventional warfare between one another, a war against nature, and conventional violence against smaller nations. When local governments were not amenable to the policies or political ideologies of the larger power, they were often implemented by unbearable economic pressure or by force via armed militant groups who overthrew the existing political regime<sup>103</sup>. This took place regardless of whether or

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<sup>100</sup>

<https://www.npr.org/2023/12/28/1220881380/overdose-fentanyl-drugs-addiction#:~:text=For%20the%20first%20time%20in%20U.S.%20history%2C%20fatal%20overdoses%20peaked%20above%20112%2C000%20deaths%2C%20with%20young%20people%20and%20people%20of%20color%20among%20the%20hardest%20hit>

National Safety Council. Drug Overdoses.

<https://injuryfacts.nsc.org/home-and-community/safety-topics/drugoverdoses/data-details>

<sup>101</sup> National Archives. (2022). *Vietnam War U.S. Military Fatal Casualty Statistics*. National Archives.

<https://www.archives.gov/research/military/vietnam-war/casualty-statistics>

<sup>102</sup> <https://www.atlanticcouncil.org/content-series/hybrid-warfare-project/chinas-opioid-challenge-all-is-fair-in-law-and-war/>

NSC. *Drug Overdoses*. NSC.

<https://injuryfacts.nsc.org/home-and-community/safety-topics/drugoverdoses/data-details/>

<sup>103</sup> A dataset compiled by O'Rourke (2020) found that there have been sixty-four US-backed covert regime changes - ten times more than the six overt regime changes. Covert tactics include: assassinating foreign leaders; sponsoring coups d'état; covertly meddling in foreign elections; aiding, funding, and arming anti-government dissident groups; and attempting to incite popular revolutions.

By contrast, overt regime changes involve operations which publicly acknowledge the use of military force to replace the political leadership of another state. Overt military actions include air strikes aimed at leadership decapitation or limited invasions to remove foreign leaders.

More generally, the most frequent goal of international economic sanctions is regime change and democratization, however these tend to be less effective and often backfire (Oechslin, 2014; Weyland, 2018; Djuve & Knutsen, 2023).

O'Rourke, L. A. The Strategic Logic of Covert Regime Change: US-Backed Regime Change Campaigns during the Cold War. *Security Studies* 29, 92–127 (2020) <https://doi.org/10.1080/09636412.2020.1693620>  
Weyland, K. Limits of US Influence: The Promotion of Regime Change in Latin America. *Journal of Politics in Latin America* 10, 135–164 (2018) <https://doi.org/10.1177/1866802X1801000305>.

not it required grave human rights abuses and left the country in a state of chaos. Intelligence circles and policy think tanks have long known that these kinds of political practices increased the likelihood of terrorism and violent radicalization<sup>104</sup>. Political instability and economic stagnation in the presence of massive wealth inequality foster ethnic, ideological and religious extremism and the violence that accompany them. Violent groups must draw new members from the wider community they live within, and the foreign policies of larger nations (such as those involving aerial bombings, civilian casualties, regime change, occupation, and economic exploitation) are major recruiting devices<sup>105</sup>. The attitudes of local citizens towards terrorist

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Djuve, V. L. & Knutsen, C. H. Economic crisis and regime transitions from within. *Journal of Peace Research* 00223433221145556 (2023) doi:10.1177/00223433221145556  
<https://doi.org/10.1177/00223433221145556>.

Oechslin, M. Targeting autocrats: Economic sanctions and regime change. *European Journal of Political Economy* 36, 24–40 (2014) <https://doi.org/10.1016/j.ejpoleco.2014.07.003>

See also: Kinzer, S. *Overthrow: America's Century of Regime Change from Hawaii to Iraq*. (Macmillan, 2007)

<sup>104</sup> Don Vatta Nata Jr, Desmond Butler. (2003) *Threats and Responses: Terror Network; Anger On Iraq Seen As New Al Qaeda Recruiting Tool*. New York Times.

<https://www.nytimes.com/2003/03/16/world/threats-responses-terror-network-anger-iraq-seen-new-qaeda-recruiting-tool.html>

Stern, Jessica. (2003). *How America Created A Terrorist Haven*. New York Times.

<https://www.nytimes.com/2003/08/20/opinion/how-america-created-a-terrorist-haven.html>

- <sup>105</sup> ● The US National Intelligence Council (NIC) predicted that as globalization proceeded, "deepening economic stagnation, political instability, and cultural alienation [will] foster ethnic, ideological and religious extremism, along with the violence that often accompanies it." NIC. (2002). *Global Trends 2015: A Dialogue About The Future With Nongovernment Experts*. NIC.  
[https://www.dni.gov/files/documents/Global%20Trends\\_2015%20Report.pdf](https://www.dni.gov/files/documents/Global%20Trends_2015%20Report.pdf)

- MacFarquhar, N. (2001). *A NATION CHALLENGED: JIDDA; Saudi Dilemma: A Native Son, A Heinous Act*. The New York Times.  
<https://www.nytimes.com/2001/10/05/world/a-nation-challenged-jidda-saudi-dilemma-a-native-son-a-heinous-act.html>
- "...we can now remove almost all of our forces from Saudi Arabia. Their presence there over the last 12 years has been a source of enormous difficulty for a friendly government. It's been a huge recruiting device for al Qaeda." Drum, K. (2003). *Paul Wolfowitz and Vanity Fair*. Washington Monthly. <https://washingtonmonthly.com/2003/05/31/paul-wolfowitz-and-vanity-fair/>
- Shadid, A. (2003). *Old Arab Friends Turn Away From U.S*. Washington Post.  
<https://www.washingtonpost.com/archive/politics/2003/02/26/old-arab-friends-turn-away-from-us/4948b7bb-a5a9-4a89-a6b5-ef70e2fcdf40/>
- "In a classified intelligence bulletin last month, the Federal Bureau of Investigation offered a similar warning to state and local law enforcement agencies, alerting them to the possibility that a war with Iraq could unleash acts of anti-American violence by extremists who do not belong to Al Qaeda or other Middle Eastern terrorist groups but sympathize with their grievances against the



networks like the Taliban, for example, are often ones of begrudging acceptance, viewed as the lesser of two evils, necessary in fighting a war against foreign invaders<sup>106</sup>.

Given the gift of hindsight, it is safe to say that the international political order following WWII did not lead to equally beneficial outcomes for all nations, all people, and future generations. The last century was not a story of peace and progress for everyone. The benefits and harms were very unevenly distributed, and popular dissent and power conflict have grown on the basis of dissatisfaction with this world system<sup>107</sup>. Escalations in subtle forms of harm (and recent increases in direct casualties from war) point to a greater willingness to engage in violence by

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United States.” Shenon, P. (2003). *THREATS AND RESPONSES: DOMESTIC SECURITY; Ridge Warns That Iraq War Could Raise Terrorist Threat*. New York Times.

<https://www.nytimes.com/2003/03/04/us/threats-responses-domestic-security-ridge-warns-that-iraq-war-could-raise.html>

- Booth, K., Dunne, T. (2002). *Worlds in Collision: Terror and the Future of Global Order*. Palgrave Macmillan.

<sup>106</sup> "less than 6 percent of those polled believed that the United States was waging its campaign in Iraq to create a more democratic Arab or Muslim world. Close to 95 percent were convinced that the United States was after control of Arab oil and the subjugation of the Palestinians to Israel's will. The survey, commissioned by University of Maryland professor Shibley Telhami, also showed that overwhelming margins said that terrorism was going to increase, rather than decrease, as a result of the U.S.-led invasion."

Ibrahim, Y. M. (2003). *Democracy: Be Careful What You Wish For*. Washington Post.  
<https://www.washingtonpost.com/archive/opinions/2003/03/23/democracy-be-careful-what-you-wish-for/56ebf800-21f1-4c5a-9d83-5d9c6e9b75e4/>

See also:

Terpstra, N. (202). *Rebel governance, rebel legitimacy, and external intervention: assessing three phases of Taliban rule in Afghanistan*. *Small Wars & Insurgencies* 31, 1143–1173.

<https://doi.org/10.1080/09592318.2020.1757916>

Weigand, F. (2017). *Afghanistan's Taliban – Legitimate Jihadists or Coercive Extremists?* *Journal of Intervention and Statebuilding* 11, 359–381. <https://doi.org/10.1080/17502977.2017.1353755>

<sup>107</sup> "It is only natural that State policy should seek to construct a world system open to Us economic penetration and political control, tolerating no rivals or threats." Bacevich, A. J. (2002). *American Empire: The Realities and Consequences of U.S. Diplomacy*. Harvard University Press.

"Today, there are no colonial powers willing to take on the job, though the opportunities, perhaps even the need for colonisation is as great as it ever was in the nineteenth century." Cooper, R. (2002). *The New Liberal Imperialism*. The Guardian. <https://www.theguardian.com/world/2002/apr/07/1>

Henry Kissinger argued that the world system should be based on the recognition that "the United States has global interests and responsibilities" while its allies have only "regional interests." Kissinger, H. (1977). *American Foreign Policy*. W. W. Norton & Company.

more groups seeking to shape the world in their favor: major states resorting to force to resolve territorial disputes<sup>108</sup>, revolutionaries usurping governments they perceive as illegitimate<sup>109</sup>, religious groups waging holy wars, PSMCs and ICOs pursuing profit, and political radicals of any kind promoting their preferred ideology. Generally someone will only resort to violence if they have a reason to do so (*motivation*), weapons (*means*), and knowledge of how to use them (*method*). All three of these are increasing across the board for a greater portion of the general population: ***more individuals and groups are willing and able to be violent given exponentially advancing technology and in some cases professional military training.***

### *Violence and Realpolitik*

When assessing risks from violence, the intensification of irregular warfare foregrounds the importance of understanding *Realpolitik* perspectives.<sup>110</sup> Someone is considered to be *Realpolitik* when they prioritize practical and strategic concerns over ideological and ethical commitments. In such cases the main motive of behavior is not to promote the virtues of democracy or communism, it is to enact strategically favorable policies that protect your interests. Kinetic warfare is then simply only one of several possible ways to do so.<sup>111</sup> Military power is an instrument of power – there are many others including economic, bureaucratic, technological, and ideological forms. From a *realpolitik* perspective, power is primary. Politics is thus viewed to be a system whose behavior is governed by laws of power much like the natural world is governed by laws of physics. While not all military and political actors view the world in

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<sup>108</sup> Russia-Ukraine, China-Taiwan

<sup>109</sup> Need cite:

<sup>110</sup> To-do: Note on Realism, liberalism, material security theory

<sup>111</sup> To paraphrase the famous Prussian military strategist Carl von Clausewitz: *war is politics by other means.*

this way, it is clear from a study of history that many do<sup>112</sup>. We risk gravely misunderstanding reality when we turn a blind eye to people's willingness to resort to violence in pursuit of power.

As a political or military official, if you believed a war would be of greater benefit than cost, why would you not initiate it? The history of empire expansionism reveals that many leaders considered their conquests in terms of a cold cost-benefit calculus<sup>113</sup>. This way of thinking can appear alien and unfamiliar to those who view war as an unspeakable tragedy, only to be pursued as a last resort in self-defense or in response to a true (non-fabricated) humanitarian atrocity. From the broader public's perspective, sacrificing your people's lives for mere political gain is never worth it. But for those who have initiated unnecessary (i.e., largely strategically motivated) wars throughout history, casualties only mattered in so far as they harmed political ambitions more than they helped them (e.g., a war can depopulate your army, lower your tax base, diminish chances of reelection, risk civil uprising, etc.). Whoever initiates a war is less likely to die in it<sup>114</sup>, and if they win, they grow in power, write themselves into the history books as the righteous victor, and rule an empire with greater riches. "*War is a racket. The few profit, the many pay.*"<sup>115</sup> *For those who are motivated by the profits, it is more absurd to abstain from war than to engage in it.*

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<sup>112</sup> See for various examples:

Hiim, H. S. & Trøan, M. L. Hardening Chinese Realpolitik in the 21st Century: The Evolution of Beijing's Thinking about Arms Control. *Journal of Contemporary China* 31, 86–100 (2022) <https://doi.org/10.1080/10670564.2021.1926095>

Blagden, D. Two Visions of Greatness: Roleplay and Realpolitik in UK Strategic Posture. *Foreign Policy Analysis* 15, 470–491 (2019) <https://doi.org/10.1093/fpa/ory011>

Qobo, M. The Evolution of US–Africa Relations: From Idealism to Realpolitik. in *The Political Economy of China—US Relations: Digital Futures and African Agency* (ed. Qobo, M.) 93–112 (Springer International Publishing, Cham, 2022). [https://doi.org/10.1007/978-3-030-86410-1\\_5](https://doi.org/10.1007/978-3-030-86410-1_5)

Zalayati, I. Realpolitik and Jihad: The Iranian Use of Shiite Militias in Syria. *Digest of Middle East Studies* 28, 296–328 (2019) <https://doi.org/10.1111/dome.12193>

Readman, K. S. Between Political Rhetoric and Realpolitik Calculations: Western Diplomacy and the Baltic Independence Struggle in the Cold War Endgame. *Cold War History* 6, 1–42 (2006) <https://doi.org/10.1080/14682740500395402>

<sup>113</sup> Gochman, C. S. & Leng, R. J. Realpolitik and the Road to War: An Analysis of Attributes and Behavior. *International Studies Quarterly* 27, 97–120 (1983) <https://doi.org/10.2307/2600621>

<sup>114</sup> A study of all interstate wars from 1495 to 1991 found that war initiators won 60% of the time. A little over 50% for 16th - 18th centuries, but much more likely to win for recent centuries; 3/4 for the 19th century and 2/3 for the 20th. Wang, K., Lee Ray, J. (1994). *Beginners and Winners: The Fate of Initiators of Interstate Wars Involving Great Powers Since 1495*. *International Studies Quarterly*. 38, 139-154. <https://www.jstor.org/stable/2600875>

<sup>115</sup> General Smedley D. Butler

There has never been a shortage of virtuous reasons to go to war. Justifications are always in demand – and always in supply – to bridge the gap between the public's view of war (i.e., not wanting to sacrifice their family, friends, and children) and the realpolitik view of war (i.e., as a strategic opportunity). War is typically sold to the people as if it is of the utmost ethical and existential consequence, even when this is later shown to have been based in falsehoods<sup>116</sup>. Under assumptions of realpolitik, we should always be dubious of public statements promoting peace, freedom, liberty, democracy, equality, and workers rights when they are used to justify acts of violence. Wherever violence is put forth as the best means of ensuring essential values, skepticism is warranted .

Honest discussions of violence force us to confront the darker aspects of human experience, which we often seek to avoid. We are quick to cast harmful behaviors into the shadows when we ignore our own and others' willingness to be violent, and all of the ways this civilization assumes violence for its very existence. Most (nearly all) of our activities depend upon energy sources (e.g., oil) and commercial products (e.g., digital technology) that depend upon supply chains established on the basis of wars with egregious civilian casualties, child and slave labor, and environmental destruction. In a civilization that is mediated through systemic violence, our dependence upon it pushes us to be complacent and conditions us to turn a blind eye. But violence is not resolved through ignorance. It continues to exist, just hidden from immediate view.

Moral constraints against violence should not be taken as a given, not in nature and certainly not in politics. Psychopathic and sadistic psychologies exist. There is a portion of the population who does not feel empathy or remorse for harm, and even takes pleasure in it. While it is a relatively small percentage of the population that enjoys torture in the way Ghengis Kahn did, it is likely a higher percentage of those who rise the ranks of political and military hierarchies. The demographics that share these antisocial personality traits are often both deeply drawn to power and disproportionately skillful in its games<sup>117</sup>.

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<sup>116</sup> There are countless historical examples here but in recent memory is the public statement that Iraq was developing weapons of mass destruction

<sup>117</sup> Place holder: research on psychopathy in leadership. Palmen, D. G. C., Kolthoff, E. W., Derksen, J. J. L. (2021). *The need for domination in psychopathic leadership: A clarification for the estimated high prevalence of psychopathic leaders*. Elsevier. 61, 101650. <https://doi.org/10.1016/j.avb.2021.101650>

[CGP Grey]. (2016, October 24). *The Rules for Rulers* [Video]. YouTube. <https://www.youtube.com/watch?v=rStL7niR7gs>

Those willing to wage unnecessary wars only refrain from violence if there is a better means of achieving their goals. They do not naturally prioritize mutually beneficial outcomes. Compromise comes when it offers something of greater benefit than mere self-interest, such as increasing wealth through trade or economic growth (which is reaching its limits as civilization pushes past the planet's). Or if there is threat of comparable violence in return, "peace" may be preferred as the most rational outcome. This principle is well known in political theory, where protection from violence, and its legally sanctioned use, are seen as the defining function of the "state"—that political body which serves as a "legitimate" monopoly on the use of force. It is also why the development of nuclear weapons remains such a significant motivator and driver of geopolitical tension: the technology is powerful enough that any nation with a nuclear stockpile has meaningfully leveled the playing field.<sup>118</sup>

## **Advanced Technology Arms Races & Decentralized Catastrophe Weapons**

Technological shifts have completely upended the security environment in the past and are doing so again today. Radically empowered after WWII and being the first nation to develop and deploy atomic weapons, the US found itself in a position of massive asymmetric political influence. We are once again in the midst of profound technological change – a revolution with AI and computation at the center driving the compounding advancement of every sector such as biotech, robotics, IoT, and manufacturing. This wave will be at least as consequential as nuclear. Many actors (state and non-state alike) are hoping to leverage this opportunity, to strategically make use of the potential of advanced technologies to restructure civilization and its systems of power. The stakes of technological supremacy are high, radically increasing the speed, intensity, and consequentiality of power competition.

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<sup>118</sup> Kenneth Waltz argues that those who are threatened by American Imperialism know that weapons of mass destruction are the only means to deter the US, therefore leading to proliferation of WMDs. Booth, K., Dunne, T. (2002). *Worlds in Collision: Terror and the Future of Global Order*. Palgrave Macmillan.

Artificial intelligence, most importantly, has become the new crown jewel of geopolitics. AI arms races are now a primary driver of global conflict,<sup>119</sup> leading some prominent technologists like Elon Musk, to claim that the “competition for AI superiority at a national level is the most likely cause of WWIII...”<sup>120</sup> Trillions in investment are being poured into winning this race, and as “chip bans” and monopolies over rare earth mines demonstrate, serious efforts are being made to stop anyone else from getting there first. By engineering at the level of intelligence itself, AI seeks to transform every domain of human action, enabling much more than autonomous weapons alone. It is the quintessential omni-use technology and will advance, amplify, and exacerbate every tactic of conventional and unconventional warfare.

Cyber-operations will grow in scale and sophistication with AI coding assistance and automated vulnerability detection. Military targeting is transforming with planetary-scale surveillance using facial recognition software run on drone, satellite, and “internet of things” data. Companies like Anduril are rapidly advancing autonomous weapons, integrating several military systems into a single intelligent web: fighter jets, tanks, cruise missiles, small arms, surveillance systems, and drones, all coordinated via a common AI “brain” called Lattice. This system, according to founder Palmer Luckey, is comparable to “Sky-Net,” the intelligent weapons system that went rogue in the famous sci-fi movie, the Terminator. AI augmentation of war is well underway. Other companies such as Palantir are also actively employing large-language models and other machine learning techniques into full-stack warfare: monitoring the battlefield, identifying adversaries, offering intelligent situational assessment, suggesting tactics, and automating communications and troop deployment<sup>121</sup>.

AI is also radically advancing research and engineering in the natural sciences – discovering the first novel antibiotic in over 60 years and also inventing 40,000 new chemical weapons in just under six hours<sup>122</sup>. AI enabled financial systems, like Black Rock’s Aladdin platform, manage nearly as much capital as the GDP of the United States and are essential tools in every aspect of financial warfare (e.g., currency and trade war). Deep-fake capabilities have advanced to such a point that video, audio, and personality can be faked in real time to scam people into

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<sup>119</sup> Vincent, J. (2017). *Putin says the nation that leads in AI “will be the ruler of the world.”* The Verge. <https://www.theverge.com/2017/9/4/16251226/russia-ai-putin-rule-the-world>

<sup>120</sup> Elon’s original tweet is here: <https://x.com/elonmusk/status/904638455761612800>

<sup>121</sup> Adam, D. (2024). *Lethal AI weapons are here: how can we control them?* Nature. <https://www.nature.com/articles/d41586-024-01029-0>

<sup>122</sup> Calma, J. (2022). *AI suggested 40,000 new possible chemical weapons in just six hours.* The Verge. <https://www.theverge.com/2022/3/17/22983197/ai-new-possible-chemical-weapons-generative-models-vx>



transferring capital or providing compromising material of any kind. LLMs will also likely be used to disrupt the political system, e.g., in the form of autonomous legislation drafting, loophole identification, and legal argumentation. Though each of these use-cases may initially involve distinct kinds of AI architectures, the tech industry as a whole is rapidly moving towards increasingly general intelligence. Every technique in unrestricted warfare will be advanced and potentially automated. The omni-use potential of this technology has radically intensified a global arms race to capture the “one ring to rule them all.”

Contemporary technology races are structurally different from nuclear arms races. They are vastly more complex, seemingly intractable, accelerating at a faster rate, with consequences of equal existential significance. This is in large part because advanced technologies, like AI, are vastly more difficult to contain and control than nuclear weapons. The immense difficulty of manufacturing nuclear weapons initially limited them to only a few major state actors who could be relatively easily monitored. However, the technologies required for cyberweapons, drones, biological, chemical, autonomous, and population centric weapons can be developed and deployed by vastly more state and nonstate actors. As mentioned in the previous chapter, unlike nuclear, the cutting edge of technology is not exclusively coming from weapons innovation but from civilian technology, which can then be exploited by all kinds of actors for all kinds of purposes. Emerging innovations are advancing in the military and commercial sector, across many industries, and in many countries. This includes ongoing, active development by a massive open source community, many of whom are technically sophisticated and who also greatly value anonymity and employ advanced cryptography to protect it. ***Advanced technologies are escalating tensions between major powers while they are simultaneously distributing the capacity for globally consequential violence outside of the agency of nation states.***

Non-state actors, such as terrorist networks and criminal organizations, are becoming increasingly capable of imposing massive costs onto larger actors like national militaries and governments. The most powerful military in the world was unable to comprehensively defeat insurgencies who were primarily using road bombs and suicide bombers. With technological advances and decreasing costs the barrier to entry for large-scale destruction will only continuously get lower. A technically minded terrorist with internet access can now be armed with technological power that would have ten years ago been prohibitively costly, only accessible to well-resourced militaries. Controlling the decentralization of weapons was always

difficult, but as these technologies become cheaper and more widely available, preventing their harmful applications becomes nearly impossible.

Weaponizable drones are commercially available, and the swarming and object recognition algorithms are accessible with open source code: autonomous assassins – *slaughter bots* – and AI-drone enabled infrastructure attacks are not the sole privilege of nation-state militaries. Similarly, customizable bioweapons can be made with a benchtop DNA synthesizer costing as little as \$25,000, assembled with detailed instructions provided by open source and jailbroken LLMs. It is relatively well known at this point that generative AI content and deep fakes can create personalized propaganda and misinformation campaigns at scale. Less well understood, however, is how these same technologies can lead to other critical human systems failures like causing a run on a bank with false images of crowds withdrawing money, fake reports of the banks low deposits, further backed by the posts of fictitious clients' on online forums. In unrestricted warfare, smaller actors must employ any means necessary. Nothing is off limits, and omni-use technologies enable omni-directional attacks.

## **Corporate Actors**

When considering planetary-scale irregular warfare, major transnational technology companies (such as Alphabet, Amazon, Microsoft, OpenAI, Anthropic, Meta, Palantir, Anduril, Musk Industries [Tesla, xAI, SpaceX], Nvidia, BlackRock, etc.) are at least as relevant as the G20 or any other non-state actor like terrorist networks and ICOs. The total technological capability and financial capital of the top 20 companies are far beyond most nation-states. The market caps of the top seven companies in the world are worth more than the GDP of 150 different nations. They all have deca-billion dollar technical infrastructures that rival or exceed major militaries: including advanced communication systems, data-centers, gpu-clusters, manufacturing capabilities, energy plants, IoT systems, and satellites. Nearly all of the top companies are leaders in AI, advancing multiple applications and cognitive architectures as well as robotics, sensors, and biotech – usually with the ambition to move towards increasingly general (or super) intelligent systems.

Most G20 countries profoundly depend upon these companies to function. Government services are run on Amazon's cloud computing infrastructure or over Starlink's communication channels.

The US intelligence apparatus – for example, the CIA, DHS, NSA, FBI, CDC, SOC, etc – heavily relies on Microsoft’s GovTech suite and Palantir’s software services. Elon Musk’s SpaceX is responsible for 50% of all orbital operations globally and 80% of the weight brought into space every year in the US. Given the company’s monopoly on space-flight, **the US military is fundamentally dependent upon them for essentially all of their space activity.**

Corporate entities do not function as democracies. They are completely top-down hierarchical structures beholden to shareholders, not the broader public. Leading CEOs tend to be students of the art of war who have studied unconventional tactics and engage in them to advance their own objectives year over year. Major companies regularly pressure nation states to submit to their interests by choosing where they will operate or by threatening to remove access to critical services (e.g., Starlink Services in the Ukraine). Lawfare is a norm amongst the biggest actors who employ the best, most expensive firms to fight anyone (other companies, public institutions, or other nations) who proves to be an obstacle to their goals. The major players are masters of shaping public opinion via massive public relation campaigns, or more recently (and more effectively) by controlling the algorithms of social media platforms to propagate the worldviews that suit their interests at a given time.

## **Population-Centric Warfare in the Age of Intelligent Machines**

One of the primary fronts of war in an irregular conflict is the mind. Unconventional war is often won by the attrition of the enemy’s will to fight and the collapse of their culture. Unrestricted conflict is characterized by hazy lines between civilian and combatant and a turn towards population-centric warfare (see box z) which may involve everything from getting a population to oppose a war to sowing bitter infighting and turning a population against itself.

Population-centric warfare targets the social and cultural underpinnings of a civilization just as the destruction of roads, crops, and military assets targets physical infrastructures.

*Tactics in Population Centric Warfare*

- **Fear, Uncertainty, and Doubt (FUD)**: FUD is both a result and a technique in population-centric warfare. Example tactics include sensationalism, information overwhelm, and an over-emphasis on conflicting findings.
- **Distraction and Misdirection**: Redirecting a target population's attention away from essential issues, e.g., by promoting unhealthy behaviors like drug or device addiction.
- **Information Warfare**: manipulating the flow of information to shape a population's perceptions, beliefs, and behaviors; for example, distorted representation of facts, censoring opposition, creating confusion, or fostering unwarranted certainty.
- **Narrative Warfare**: distinct but related to information is narrative, which targets identity, emotions, and core values; propagating compelling stories that appeal to a target population's emotions more than logic.
- **Pavlovian Warfare**: with AI image generation, it is easy to spread evocative, potentially disturbing, images to create strong associations with specific people or ideas. Even if an image is later shown to be false, the imprinted association may remain and alter behavior as a result.
- **Schismogenic Warfare**: identifying and exacerbating existing fault lines within a population to deepen divisions (generate "schisms"), sow discord, and turn the population against itself.
- **Statistical Warfare**: the selective presentation of statistics (e.g., cherry-picking) to create the appearance of factuality and justify a particular argument of strategic interest.

Box

Today every major government and non-state actor is engaging in what has been called *computational propaganda* – the use of information technologies to augment population-centric warfare. Cyborg armies are assembled, a mixture of human brains, cultural software (memes), digital hardware, and artificial intelligence. They are then deployed in the digital sphere with

citizens on social media being subject to propaganda from all sides: domestic political parties, foreign governments, corporations, and a variety of non-state actors, all aided by AI bots and sock puppet accounts<sup>123</sup>. ***While increasingly powerful weapons are being distributed to the broader public, state and non-state actors are escalating and technologically enhancing their population-centric warfare efforts, often with the explicit intent to polarize, confuse and radicalize the enemy's population.***

In some cases those on the receiving end of a propaganda campaign are military veterans who themselves have been through tactical training. In 2020 professional troll farms in Eastern Europe were creating the content for the 16 most popular Christian facebook pages, influencing millions of users from a demographic known to include retired US military and law enforcement.<sup>124</sup> Within the last decade there have been domestic terrorism attacks on critical US infrastructure that likely could not have been done without military training. The attack on the Metcalf transmission station in 2013, for example, was called a “professional job” and “the most significant incident of domestic terrorism involving the grid that has ever occurred.” Before opening fire on the transformers, the attackers cut the fiber optic lines that were running nearby. They knew precisely where to shoot the transformers, aiming at the oil-cooling systems, causing them to leak and overheat. The perpetrators and their motives remain unclear to this day. The point here is not that the Metcalf attack was necessarily the result of information warfare or social media radicalization. The concern is that the risk of similar events has increased, given the thousands of former special operations officers, trained to identify high leverage strategic targets, who are now increasingly subject to radicalizing content online and have grown distrustful of their government and fellow citizens.

In response to this threat – of population-centric warfare radicalizing military or political officials – the Chinese Communist Party now requires military officers to use approved phones, which are heavily regulated and do not have access to certain features. No comparable policies have been rolled out in Western nations like the United States. Such strong government intervention is often viewed as heavy-handed and invasive, undermining personal freedoms. However, they

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<sup>123</sup> While impossible to determine the exact number of AI bots on the internet, one estimate suggests that 73% of all internet traffic during Q3 2023 came from bots.

Townsend, K. (2023). Bad Bots Account for 73% of Internet Traffic: Analysis. Securityweek Network. <https://www.securityweek.com/bad-bots-account-for-73-of-internet-traffic-analysis/>

<sup>124</sup> Hao, K. (2021). *Troll farms reached 140 million Americans a month on Facebook before 2020 election, internal report shows*. MIT Technology Review.

<https://www.technologyreview.com/2021/09/16/1035851/facebook-troll-farms-report-us-2020-election/>

also defend against a critical attack surface and increase the competitive advantage of the CCP in terms of the psychological security of its citizens, military, and political officials. This tension between security and liberty is at the heart of the metacrisis; where humanity finds itself caught in several double binds.

Today the human psyche is the most undefended terrain in modern warfare. In most domains of war, advances in offensive capability are matched with corresponding advances in defense. New missiles are met with new missile detection and defense systems. When cyberattacks improve so does cybersecurity. But this has mostly not held true in population-centric warfare. Psychological-attacks have become vastly more powerful than psychological-defense. In part this is because competing to manipulate the hearts and minds of people is different than seeking to protect and educate them. Countering an enemy's propaganda campaign with a propaganda campaign of your own is not providing psychological defense. It is a recipe for destroying a population's ability to make sense of the world around them, thereby ushering in an age of collective insanity.

Emerging technologies like generative AI are radically escalating this mismatch between psychological attack and defense. The hidden power of AI generated content is undue influence that is impossible to resist or detect, for which there is currently no known means of psychological-security. Hyper-realistic images leave lasting impressions. Even if we later learn that an image was false, the effects do not go away. The image cannot be unseen, and the association cannot be erased. The intentional use of these tactics in conflict to shape a target's perception and action is what we call Pavlovian Warfare (in reference to the Russian neurologist Ivan Pavlov whose experiments laid the foundations for behaviorist psychology). The logical conclusion of increasing Pavlovian Warfare is that the rate, volume, and personalization of AI generated content so systematically desensitizes the population to differences in what is real and fake that humanity enters into a world where such distinctions are effectively lost, a world where no one can tell what is real and increasingly ceases to care.

## **The Failure of Legacy Security Concepts**

In the wake of Hiroshima and Nagasaki, it was evident to many that the all-out use of our most powerful weapons would be suicide, and total nuclear war would not be of benefit to anyone moving forward. Fortunately, for a short time, bipolar conflict between the US and USSR simplified nuclear deterrence. At first only these two nations had major nuclear programs with strategic arsenals which resulted in a massive and visible physical footprint. It was demonstrable that both sides could maintain enough weapons to retaliate against an enemy attack, ensuring that neither the US nor USSR would have a totalizing first-strike advantage. No one initiated a direct kinetic conflict due to the likelihood of it escalating to nuclear conflict and thus their own annihilation as a result. This was the doctrine of *Mutually Assured Destruction* (MAD), the public policy of the US and USSR to deter the use of nuclear weapons during the Cold War.

***There is no analogous strategy to mutually assured destruction for this new class of widely distributed, massively powerful, advanced technologies.*** Strategic responses to non-state actors significantly diverge from those assumed in traditional military strategy. Members of a terrorist network, for example, may embrace the possibility of an honorable death and are not necessarily deterred by threats of retaliation. In contexts of asymmetric warfare, retaliation by the larger actor may actually make the smaller player stronger. It is extremely difficult to target an enemy with no head that is spontaneously emerging and self-organizing out of the population. When the target is a decentralized network loosely organized around a particular worldview, failure to eliminate the entire support base can lead to something like antibiotic resistance. If the whole network is not destroyed, it may simply reproduce and adapt.

Unlike elected officials, and autocratic leaders, the potential for political and military blowback does not cause these actors to automatically hesitate to use their most powerful weapons. The idea of mutually assured destruction was only reasonable because the leaders of each nation could somewhat safely assume that the other was interested in their own survival; i.e., that mutual destruction was viewed as a bad outcome by both parties. Today, individuals and groups with worldviews from the seventh century are being given 21st century technology whose destructive capabilities did not even exist a decade ago and any comparable capacities were only given to the highest ranking political and military officials whose motivations, training, and responsibilities were somewhat more predictable and well-understood.



Today's civilization is distributing increasingly dangerous capabilities to many different types of actors with wildly divergent worldviews, in a world where people feel more disenfranchised, desperate and sympathetic to extreme ideologies. Classical deterrence is no longer possible. Predicting where an attack will come from and how a conflict will escalate is no longer possible. As more and more groups are pulled into irregular warfare with increasing access to technological capabilities, the line between combatants and civilians has blurred. Under such conditions, civilization either breaks down from increasing catastrophic violence, or becomes a human rights disaster due to the implementation of an advanced tech mediated police state. This tension then creates a positive feedback loop as the fear of the draconian system of control is also a major motivator of radicalization, increasing extremism and increasing surveillance are coupled, both justify themselves in terms of the other.

## **The Risk of Nuclear War**

Even with the doctrine of mutually assured destruction, humanity was frighteningly close to total nuclear war on several occasions, such as the Cuban Missile Crisis, in which we only narrowly avoided complete annihilation based on a decision made by a single USSR submarine commander<sup>125</sup>. The head of the United States' Strategic Command, General George Butler, once said that "We escaped the Cold War without a nuclear holocaust by some combination of skill, luck, and divine intervention, and I suspect the latter in greatest proportion."<sup>126</sup> Upon an examination of history, we find that those most closely involved with the situation saw humanity's survival as somewhat of a miracle (and this was in a world with only two nuclear superpowers). We also find that nuclear policy was much like other public policies: highly contested and subject to vociferous debate and disagreement. Mutually Assured Destruction was the *publicly stated doctrine*. Not everyone in the military establishment agreed with it. Several prominent strategists believed nuclear war could escalate gradually just like other

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<sup>125</sup> Vasili Arkhipov convinced his commander that their submarine was not under attack, preventing the launch of a nuclear missile. National Security Archive. (2022). *The Underwater Cuban Missile Crisis at 60*. National Security Archive. <https://nsarchive.gwu.edu/briefing-book/russia-programs/2022-10-03/soviet-submarines-nuclear-torpedoes-cuban-missile-crisis>

<sup>126</sup> Schlosser, E. (2014). *Command and Control: Nuclear Weapons, the Damascus Accident, and the illusion of safety*. Penguin Books.

conflicts; all-out nuclear war was only one of several possibilities. Others argued that first-strike advantage was achievable and should be pursued at all costs<sup>127</sup>.

While the US and USSR were publicly preaching deterrence and disarmament, they were also racing to achieve nuclear superiority. Trillions of dollars later,<sup>128</sup> humanity is responsible for an arsenal of unimaginably nightmarish weaponry, including nuclear “bunker busters,” delivery systems with satellite precision, and hypersonic missiles. Recent classes of hypersonic missiles can travel between 7-19,000 miles per hour<sup>129</sup>. With satellite and laser precision, they can hit targets within meters of their intended location<sup>130</sup>. Modern nuclear missiles may be launched from the air, underwater, or land (the *Nuclear Triad*) from thousands of points distributed around the globe. The submarines and aircrafts wielding them are rapidly improving in speed and stealth capability and may be operated directly by a human, controlled remotely, or (in principle) completely autonomously guided by AI. The need to monitor possible nuclear strikes demands a panopticonic system of global surveillance maintained by every major power.

### **Instability of Nuclear Deterrence**

The original logic of mutually assured destruction – believed by some portion of the security community – was only formally possible with two nuclear superpowers. Every added nuclear power (and advancements in weapons of mass destruction) brought an element of uncertainty and a change in nuclear doctrine. Today nine nations possess warheads, at least four of whom are holding the coveted nuclear triad. There are now many actors with many different methods of escalation and a vastly more complex environment of geopolitical alliances and tensions, making it essentially impossible for deterrence policy to be as stable as it was during the Cold

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<sup>127</sup> The Sigal 1979 paper goes into it a lot more. Wohlstetter is the other main strategist that advocated first use. Prior to the USSR getting weapons John von Neuman notoriously said “you say tomorrow, I say today”

<sup>128</sup> Nine nuclear nations spent about \$82.9 billion in 2022 alone. ICAN. *The cost of nuclear weapons*. ICAN. [https://www.icanw.org/the\\_cost\\_of\\_nuclear\\_weapons](https://www.icanw.org/the_cost_of_nuclear_weapons)  
From 1940 - 1996, the US spent nearly \$5.8 trillion (1996 USD) on nuclear weapons and related programs including waste management. Brookings. *The Hidden Costs of our Nuclear Arsenal: Overview of Project Findings*. Brookings.

<https://www.brookings.edu/the-hidden-costs-of-our-nuclear-arsenal-overview-of-project-findings>

<sup>129</sup> Bugos, S., Reif, K. (2021) *Understanding Hypersonic Weapons: Managing the Allure and the Risks*. Arms Control Association.

[https://www.armscontrol.org/sites/default/files/files/Reports/ACA\\_Report\\_HypersonicWeapons\\_2021.pdf](https://www.armscontrol.org/sites/default/files/files/Reports/ACA_Report_HypersonicWeapons_2021.pdf)

<sup>130</sup> <https://www.geostrategy.org.uk/research/hypersonic-weapon-systems-high-expectations/>

War.

The situation between the US and China, for example, is a fundamentally different kind of geopolitical conflict than that of the US and USSR in the Cold War. Unlike the USA and USSR, the US and Chinese economies are deeply entangled and mutually dependent<sup>131</sup>. In the midst of this dependence, systemic rivalry between the two nations is ongoing and escalating including economic tactics like export controls to prevent technological advancement, dominance over critical resources (such as rare earth metals, oil, etc.) militarily and economically backing the others' adversary (e.g., China's support for Russia; the US for Taiwan), espionage, intellectual property theft, continuous cyberwarfare, and deliberate political interference and cultural influence campaigns. Complex and consequential alliances have been formed by the two nations, and their conflict takes place alongside escalating tensions between several other nuclear armed nations: for example, between China, India, and Pakistan, the ongoing conflicts in the Middle East, and the increasingly dangerous and destructive war between Ukraine and Russia.

When the US and USSR were the only nations with strategic nuclear arsenals, the situation was horrifically precarious and came quite close to world ending war. Today ***there are more paths to nuclear conflict and profound uncertainty in nuclear policy, making the prevention of nuclear weapon use radically more difficult than in the past.*** Advancing technologies, changes in military and political leadership, and shifting systems of geopolitical alliances have made nuclear doctrine much more ambiguous. It is an open question, for example, whether or not the use of tactical nuclear weapons (smaller, short-range weapons used on the battlefield to destroy specific targets) would result in full blown nuclear war<sup>132</sup>. More people in positions of

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<sup>131</sup> Elon Musk referred to them as effectively "conjoined twins." Shepherd, C., Tobin, M. (2023). *China gives Elon Musk a hero's welcome - and a message for the U.S.* Washington Post.

<https://www.washingtonpost.com/world/2023/06/01/elon-musk-tesla-twitter-china/>

<sup>132</sup> The Bush administration considered using nuclear weapons against Iraq as 'bunker busters.' Arkin, W. M. (2003). *The Nuclear Option in Iraq*. Los Angeles Times.

<https://www.latimes.com/archives/la-xpm-2003-jan-26-op-arkin26-story.html>

A Pentagon policy review identified Iraq, Iran, and North Korea as potential targets for American nuclear strikes. Schmitt, E. (2002). *U.S. Tries To Explain New Policy For A-Bomb*. New York Times.

<https://www.nytimes.com/2002/03/11/world/us-tries-to-explain-new-policy-for-a-bomb.html>

the US Strategic Command (STRATCOM) described nuclear weapons as the most valuable in the arsenal because "unlike chemical or biological weapons, the extreme destruction from a nuclear explosion is immediate, with few if any palliatives to reduce its effect." \*(WMDS)

STRATCOM has written that "...it hurts to portray ourselves as too fully rational and cool-headed. The fact that some elements may appear to be potentially "out of control" can be beneficial to creating and reinforcing fears and doubts within the minds of an adversary's decision-makers." STRATCOM. (1995).

military influence are advocating for the value of deploying smaller-scale warheads in battle, arguing that it is possible to do so without leading to total annihilation. This shift in tide can be seen in the increasing number of tactical nuclear systems being developed today and in the ballooning R&D budgets directed towards modernizing today's arsenals. Willingness to "think the unthinkable" is growing.

Cyber-warfare is also deeply complicating the situation. It is possible to hack nuclear systems to stop operations, initiate false launches, cause a missile detection system to signal an attack which is not actually occurring, or to hide one which is imminently incoming. Dependence on digital systems vulnerable to cyberattack makes attribution for a nuclear strike more difficult and subject to plausible deniability. No nation can be confident that their critical information technology will work under sophisticated cyber warfare. Evidence suggests that the nuclear programs and systems of at least two major nations have already been successfully penetrated by cyberoperations<sup>133</sup>. The doctrines of several states now include the possibility of using nuclear weapons in response to cyber-attacks.

In war (conventional or irregular), uncertainty tends to make everyone more aggressive. "Best practice" is to assume the worst possible intentions of one's adversary until proven otherwise. Military strategy, budgets, and weapons development are guided by this principle. This reliably drives arms races, as each innovation in weaponry and strategy is matched and ratcheted up by corresponding developments on all sides – rapidly increasing the upper bound of total possible violence as a result. All nuclear-armed states continue to modernize their forces at a significant pace. While the number of nuclear weapons in the world has declined since the Cold War, the pace of reduction has slowed and mostly continues in order to dismantle retired weapons. The general trend is that total nuclear capability is increasing, and the technologies are becoming vastly more sophisticated. Nuclear powers still have strong reason not to initiate a full-scale strike against the other, but the countless close calls during the Cold War remind us that, even in a radically simpler situation, increased suspicions, arms build-up, and military maneuvering are sufficient to bring us to the brink of total war.

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*Essentials of Post-Cold War Deterrence*. STRATCOM. Pg. 7.  
<https://www.nukestrat.com/us/stratcom/SAGessentials.PDF>

<sup>133</sup> Iran and India

## Breakdown of Security Apparatus: Overwhelm or Oppression

### [EDITS]

There are massive security systems whose purpose is to prevent catastrophes from violence, but they are reaching the limits of their ability to do so. This is due in part to the overwhelming complexity of managing the situation, which can be seen through the lens of a few pernicious asymmetries. Offensive technologies are exceeding defensive ones (it is easier, and cheaper, to create a killer drone swarm than to defend against it)<sup>134</sup>. Decentralized catastrophe weapons are being developed and disseminated faster than effective regulation can be created to contain them. Fear, uncertainty and doubt (FUD), information overwhelm, and bitter political infighting are intensifying; clear, coherent dialogue and democratic action are not. Enmity and coercive geopolitical maneuvering is vastly more common than acts of earnest diplomacy, and it is much harder to rebuild trust once it has been lost.

Stress on the system is compounding. In addition to the asymmetries mentioned above, there is an abundance of ecological and economic factors that are increasing the potential for catastrophic violence. More severe and frequent extreme weather events and unprecedented rates of displaced peoples are not conditions conducive for peace. Neither is a civilization which is surpassing planetary boundaries and hitting limits to economic growth. Desperate and disgruntled populations witnessing incredible economic inequality, who have also been the targets of population-centric warfare for decades, are much more willing to be violent. When engaging with the system peacefully has failed to provide safety and security for oneself or one's people, it is a natural conclusion made by many that maybe engaging violently will offer better results.

The externalities of a world system under continuous irregular warfare are accelerating. Geopolitical tensions are intensifying as everyone is hoping to be the winner on the other side of the new technological paradigm. The class of advanced technologies is much more difficult to contain, monitor, and control than nuclear, and there are no existing deterrence and security strategies besides totalizing surveillance. The costs and complexity of security are rapidly increasing as the number of threats grow and new combatants arrive on the scene. Even if

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<sup>134</sup> Thompson, L. (2022). *Defeating Drones: The Most Promising Weapons Are All Non-Kinetic*. Forbes. <https://www.forbes.com/sites/lorenthompson/2022/11/01/defeating-drones-the-most-promising-weapons-a-re-all-non-kinetic/?sh=7e68c45b5b8a>

these factors were overcome, the resulting defense system – one of unprecedented scope and power – would be at grave risk of abuse. This is the topic of the next chapter: the growing possibility of dystopian oppression emerging from an unprecedented surveillance and police state.

This pendulum swing between two nightmare futures (chaos and oppression) is a product of unique features of advanced technology. While nuclear weapons could be used to threaten catastrophic war and destruction, they could not be repurposed to spy on a population or subtly shape their mind with deep-fakes and AI generated content. Advanced technologies like AI, robotics, drones, biotech, and IoT can be destructive (like nukes), but their ability to be repurposed for virtually any goal enables both catastrophic and dystopic potential like nothing else in history.

Atomic technology was also intrinsically power centralizing, where this new paradigm drives both the centralization and decentralization of power in parallel. Our current world system – its economic, legal, and security apparatuses – depends upon a certain ratio of power consolidation and distribution. It was built to have the centralized power necessary for a monopoly of violence to enforce law, while distributing enough power to overthrow the system if it became too corrupt. Advanced technology threatens to break that in both directions: leading to potentially uncheckable consolidations of power, or forms of power decentralization that fundamentally undermine rule of law, placing us in a state of anarchy.

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a Nukes can threaten war, but they cannot actually spy on you and influence your mind the way that deep fakes or social media can. The ability to make shit and break shit, to influence everything with the same tech, gives not just the catastrophe but the dystopia potential more. So new technology makes many more pathways to catastrophe, and is directly applicable to control dystopias.

