

World War v3.1

World War v3.1

Since Russia invaded Ukraine, there has been more discussion about **World War III** than at any time in recent memory. Yet, we can't help but **wonder if World War III isn't a misnomer and World War v3.1 is more accurate** – because **chips and semiconductors** are likely going to play a huge role in initiating and winning any such global conflict.

The tech space, generically, likes using “versions” and decimalized numbers rather than Roman numerals, so let's run with that.

This is more of a “thought” piece than something that is actionable today. However, we think that it is important to be laying out the background of how we are thinking about this important subject. **It is something that comes up in more conversations** and dominated the discussions we had when we were in Silicon Valley back in January. It will shape decisions and influence who wins and loses at the national and corporate levels.

The [Intel CEO at Davos](#) said that: **“Chip supply chains will shape geopolitics more than oil over the next 50 years”**.

Fifty years seems almost too long of a timeframe. It is already shaping geopolitics and getting it right in the next 5 to 10 years (not 50 years) will be crucial.

Academy's Geopolitical Intelligence Group addressed [“Rare Earths – A National Security Threat”](#) back in February 2021. During meetings, our position has been that securing (and processing) rare earths and critical minerals will dominate our commodity efforts in the coming years. Ten years ago, all you needed was a map of energy production and you could pinpoint U.S. interests. In five years, all you will need will be a map of major cobalt, lithium, etc. deposits to determine where the U.S. will be most active. The sad reality is that China figured this out years ago and we are just now seeing the urgency of the issue.

I have said (half-jokingly, but mostly serious) that the West has a vision for sustainability but no workable plan to get there, while China has no vision but a great plan to secure the resources that they think the West will need.

While we haven't focused as much on chips in the past, it is a natural extension of our thought process and these rare earths and critical minerals (and their processing) are an **integral part of the semiconductor supply chain**.

While I've doubted the effectiveness of sanctions, the one area where even I think **they have worked is in the higher-end of semiconductors**. This is one reason why we need to write this World War v3.1 report now.

Another thing that prompted us to finally get this “initial” piece out there was the reports about [IP theft at ASML](#). Finally, we've had several highly respected people recommend the [Chip War](#) book.

Today, we will lay out how we've been thinking about this at Academy and why we do think that “getting it right” will be crucial for countries and companies.

Prior “Thought” Pieces

Before diving into today's subject, we have written several thought pieces that have stood the test of time. We've included a link to the “rare earths” piece above, but this is just one example.

On China, our views have evolved, but we've historically been more negative than most on the future

World War v3.1

of the relationship with the U.S., and so far, that has turned out to be accurate.

- [A DIME Framework for Strategic Competition](#). In 2019, few were talking about the importance of naming China a “Strategic Competitor” in national security strategies.
- [The Recentralization of China](#). In 2021, we saw China clamping down on their citizens and turning more inwards, while Xi consolidated power.
- [The Beijing Olympics as Cultural Bookends](#). This piece was completed just days before Russia invaded Ukraine. The report almost “begs” people to understand that China’s needs (with respect to the West) have changed and are unlikely to revert back to anything that we have seen in the past 10 to 20 years.

Russia has always been “top of mind” for our Geopolitical Intelligence Group, even when it wasn’t on the radar for most.

- From [Watch Russia](#) (April 2021), to [Russia on the Warpath](#) (Jan 2022), to [Scenario Update](#) (10 days before the attack), the insights of our Geopolitical Intelligence Group have been invaluable in anticipating this conflict and helping investors and companies deal with it as effectively as possible.
- [Russia’s Nuclear Threat](#) was published around Academy’s 2nd Annual **Geopolitical Summit** in Annapolis (we have our 2nd San Diego Summit in less than 2 weeks). It still reflects the scenarios that we see, though it is interesting that we’ve discussed the risk of **China selling military equipment to Russia** and that was high on the list of things that Secretary of State Blinken discussed with Chinese officials this weekend.

Setting the Table

General (ret.) Walsh pointed out a few key things to think about as we address the stress around chips from a geopolitical framework:

- ***The Commerce Department is setting export controls on AI and semiconductors in an attempt to stop China from acquiring the highest-end semiconductors that could be used in advanced military systems during a future military conflict with the U.S.***
- ***The U.S. operational concept for future warfare is the Joint All-Domain Command & Control Strategy. China is attempting to outpace the U.S. military in the ongoing tech war by announcing their own operational concept called Multi-Domain Precision Warfare. The country which wins this tech war will possess the most advanced military capabilities (which will rely on high-end semiconductors).***
- ***China set 2030 as its target date to become the global leader in AI. China also expects to be on par with the U.S. militarily by 2035. High-end semiconductors are key to meeting this objective.***
- ***High-end chips are needed for AI, supercomputing, and weaponizing the technology required to achieve geopolitical power.***

I spend a lot of time with military experts in my role here at Academy and found the intensity of the “military focus” on this topic surprising. It is good that the high tech sanctions do seem to be more effective than other sanctions that we’ve imposed (Russia and Iran). **This is a top priority for national security at every level!** The military has embarked on multiple projects to ensure that chips of Chinese

World War v3.1

origin are not in any sensitive U.S. military equipment. **Without a doubt the military and national security focused agencies have been focused on this and that focus is only going to grow (both at the national level and ultimately at the corporate level).**

The Semiconductor Industry Viewed Through a Geopolitical Lens

I am sure that people in the industry will cringe at some of the simplifications here, but I strongly believe the “simplifications” will help us understand this issue and lead to fewer errors in our thought process at this stage.

Before getting into that, I want to highlight what **Admiral (ret.) Barrett** had to say. She has an interesting viewpoint as she was responsible for the **Navy’s cyber-attack capabilities**.

- ***Although the outsourcing of chip manufacturing (particularly to Asia where 75% of the world's semiconductor chips are currently manufactured) was a known problem for years, these problems really hit home during the COVID pandemic and the subsequent disruption in critical supply chains that resulted in a massive shortage of chips. Investment in organic chip manufacturing in the United States by U.S. companies has been a recognized problem for years, but only recently have government attention and corporate investment taken hold. For example, Micron Technology is investing \$100 billion to build four separate semi-conductor fabrication plants outside of Syracuse, New York. The first phase alone would provide 3,000 jobs and \$20 billion of investment over the next five years (with the other phases to follow). This represents the largest single private investment in New York State's history. The project will also create 40,000 construction and supply chain jobs, a significant boon to the state and national economy.***
- ***Control over the production of semiconductors/chips is critical to ensuring the viability of our supply chain and mitigating possible cyber-espionage and malicious activity. With the advent of the Internet of Things and digital modernization in every industry from manufacturing to agriculture, this type of control over chips for improved cyber-security is a national strategic imperative. President Biden's CHIPS and Science Act of 2022 invests in our national capacity to build chips in the United States and directs policy and funding support to R&D, workforce skills development, and science/technology. The U.S. government investment associated with the Act is significant and provides \$52.7 billion in funding including \$13.2 billion for research and development and \$39 billion for production incentives and workforce development. It also provides significant tax incentives for private industry investment in semiconductor/chip technology. This investment by both the government and private industry will result in competitive global business advantages, provide improved cyber-security for commercial and military industries, and will create jobs (particularly at plants that are built in economically depressed areas).***

Types of Chips

- **Cutting Edge.** These are the smallest, fastest, and most “state of the art” chips. The manufacturing of these chips is still dominated by Taiwan. While the U.S. and other countries might be catching up, Taiwan is still the clear leader and is well-positioned to continue that leadership. Even as Taiwanese companies build more foundries outside of Taiwan, they will not produce cutting edge products anywhere other than onshore (it is their “ace in the hole” from a geopolitical standpoint).

World War v3.1

- **High Tech.** Let's classify these chips as anywhere from one to three generations behind the "state of the art process". Taiwan is extremely strong here, but not alone. This is an area that the U.S. (and presumably Germany and Western Europe) can compete in. China is creeping up the scale here and is prioritizing this. Russia and Iran, two important adversaries in the space, cannot really compete at this level. **This is the main battle ground and an area of growing competition.**
- **Mid-to-Low Tech.** These are the chips that are being phased out, but are useful as the products they were designed for continue to be built and the manufacturers don't want to update the specs significantly. **This is the "cash cow" of the industry** and it is global in nature.
- **Commodity or Generic chips.** This is not an area that lends itself to higher cost producers. It doesn't help that much of the business was ceded to other regions and countries. At one level they are very generic, but at another level, why give up so much of the production?

While these classifications are overly simplistic, it will let us explore the geopolitical framework.

Chip Design AND Chip Manufacturing.

- Designing chips is only part of the industry. It is difficult to design chips in any case, but **it is extremely difficult to design chips that can be manufactured as well.**
- **Building the foundries is crucial.** The level of precision required to make the highest-end chips is unheard of in any other manufacturing setting.
- **It is the marriage of chip design and manufacturing technology that is the key.** That is one reason why we highlighted the ASML story so early in today's report. While it is easy to imagine people capturing schematics of chips, it is also easy to imagine them being unable to build those chips. Not that any chip company would give away their designs, but even if they did, a competitor (nation or otherwise) might have difficulty replicating it due to the difficulty in manufacturing (especially for a "cutting edge" or even "high tech" chip).
- Maybe this "marriage" was obvious (and I've wasted your time), but it seems somewhat unique to the space and is crucial from a geopolitical standpoint.

Just by using these simple building blocks we can discuss a few scenarios that come up frequently in meetings.

D.C. Pushes Too Hard

The scenario that gets discussed the most is that D.C. pushes too hard. **One thing that has stood the test of time is that the elected representatives serving in a national security capacity tend to put country first and politics second.** That is a good thing as it ensures the safety of the country as much as possible.

One concern is that D.C. gets involved in technology that isn't as critical. **The entire industry seems to be behind on the "cutting edge" restrictions and even the "high tech" restrictions.** There is a concern that the government could start interfering with segments of the industry where their action could do more harm than good (though that is potentially in the eye of the beholder).

At its simplest, U.S. companies sell a lot of "mid-tech" chips to China. That "cash cow" is an important part of what funds research and development for new chips and also funds the building of foundries on-shore. If these sales get attacked by D.C. (a possibility as the popularity of banning tech with China

World War v3.1

seems high), then the chip industry might be hurt and it would hamper its ability to wrestle more control of higher tech (and ultimately cutting-edge tech) away from Taiwan. This would potentially make it easier for China to catch up in this area.

The second problem is that many of those chips could wind up back in the U.S. as they are components in products that China manufactures for sale here.

From a commerce standpoint, there is a balancing act that needs to be executed by D.C. So far, so good, but it is something that needs to be watched closely. While we stated earlier in the piece that this isn't necessarily an "actionable" T-Report, **if we get an inkling that D.C. is going to go too far, this report will be highly actionable as this would hurt the chip industry and be inflationary (not a good combination for markets or the economy).**

The other way our "success" could play out negatively is understanding what happens to China's view of Taiwan.

China is doing what it can to build out their own chip industry. In terms of tech, they are behind us (but have closed a portion of the gap) and both countries (the U.S. and China) are behind Taiwan.

Could China Decide:

- That hastening their progress in chip manufacturing is in their best interest and try to capture Taiwan's foundries and bring them "in-house" by force?
 - This is unlikely because in any attack on Taiwan, there is some risk (no matter how much China tries to avoid this) that the factories would be damaged to the point that they are inoperable and even the equipment that can be salvaged isn't enough for China to leapfrog us in development.
- To ensure that if they can't get cutting edge chips, that we can't either?
 - If you can't get cutting edge chips but your competition can, maybe it is just easier to stop their ability to get them. Highly unlikely at this stage, but worth thinking about.

Other Thoughts

While China remains a trading partner, albeit one where our relationship grows more complex by the day, **Russia and Iran** are not.

The Iranian drones that have been sold to Russia have very old technology. The sanctions on Iran have worked to limit their tech (and presumably what they get is going into their nuclear program which is their highest priority).

The fact that Russia needs these drones is a testament to how much the chip sanctions have hurt them.

Using the phrase "two sworn enemies" of the U.S. might seem a bit harsh, but it doesn't seem too far off in terms of describing our relationship with Russia and Iran. So, here we are with "two sworn enemies" that are seeing their fighting capacity reduced due to access to chips. **What do they do about that?** Maybe they will take the proverbial "knee" and acquiesce to us, but that doesn't seem to be in their nature. We could easily weave **North Korea** into this mix as well.

We are **winning right now** against Russia, Iran, and North Korea but I do get the feeling that we are **cornering a wounded animal**, which by all accounts is risky.

China has the time, money, and the political apparatus to catch up.

World War v3.1

As **General Walsh** pointed out, they have specific goals in place and presumably have the plans in place to achieve these goals as well.

As **Admiral Barrett** pointed out, we have government support for industries too, but the relationships here tend not to be as linear as they are in China.

Bottom Line

We need to balance getting foundries built with government support and effectively cut off what technology “export” we can without going overboard.

China will try to develop their own industry, which we need to watch closely. It is also another element in their decision-making process regarding Taiwan.

The lack of “linearity” in the U.S. (i.e., open competition) has served us well. China’s single-minded approach gives them the benefit of scale that we don’t have, but risks major setbacks if they go down a wrong path.

We are a long way (hopefully) from World War v3.1 but the concept of a “commodity” war or battle for commodities is becoming a global competition for chips and technology and the stakes are extremely high!

This is a subject that will be taking up more of your time in the coming months and years and hopefully Academy will be an effective guide.

Enjoy your President’s Day!

World War v3.1

Disclaimer

This document and its contents are confidential to the person(s) to whom it is delivered and should not be copied or distributed, in whole or in part, or its contents disclosed by such person(s) to any other person. Any party receiving and/or reviewing this material, in consideration therefore, agrees not to circumvent the business proposals explicitly or implicitly contained herein in any manner, directly or indirectly. Further, any recipient hereof agrees to maintain all information received in the strictest confidence and shall not disclose to any third parties any information material to the opportunity contained herein and, upon review hereof, agrees that any unauthorized disclosure by any party will result in irreparable damage for which monetary damages would be difficult or impossible to accurately determine. Recipients recognize, and hereby agree, that the proprietary information disclosed herein represents confidential and valuable proprietary information and, therefore, will not, without express prior written consent, disclose such information to any person, company, entity or other third party, unless so doing would contravene governing law or regulations.

This document is an outline of matters for discussion only. This document does not constitute and should not be interpreted as advice, including legal, tax or accounting advice. This presentation includes statements that represent opinions, estimates and forecasts, which may not be realized. We believe the information provided herein is reliable, as of the date hereof, but do not warrant accuracy or completeness. In preparing these materials, we have relied upon and assumed, without independent verification, the accuracy and completeness of all information available from public sources.

Nothing in this document contains a commitment from Academy to underwrite, subscribe or agent any securities or transaction; to invest in any way in any transaction or to advise related thereto or as described herein. Nothing herein imposes any obligation on Academy.

Academy is a member of FINRA, SIPC and MSRB. Academy is a Certified Disabled Veteran Business Enterprise and Minority Business Enterprise and is a Service Disabled Veteran Owned Small Business as per the US SBA. Investment Banking transactions may be executed through affiliates or other broker dealers, either under industry standard agreements or by the registration of certain principals.