

Statement of Suzanne Harrison
Principal, Percipience LLC
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Foreign Competitive Threats to American and Economic Leadership
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Chairman Coons, Ranking Member Tillis, distinguished members of this Subcommittee, it is an honor and a pleasure to appear before you today to discuss how intellectual property is a key part of a comprehensive defense strategy for the United States. In a recent article that I co-authored, [Organizing America for 21st Century Comprehensive Defense](#), we highlighted the need for an updated approach to national security:

“[i]n today’s world, preserving American prosperity, freedoms, and influence requires that the U.S. government architect a comprehensive defense that integrates economic policy as a constituent component of national security policy.”

My background is in strategy, finance and organizational behavior and design. I currently own my own consulting firm providing strategic advice, IP best practices and capability building to organizations looking to get more value out of their IP and other intangibles. Although I am neither a lawyer or technologist, my consulting practice has given me considerable exposure into how organizations make decisions about IP, how they create and execute IP strategies, and how organizations get value out of their IP portfolios, whether as protection, revenue generation, cost reduction, risk reduction, or strategic positioning.

My foray into IP began accidentally. During the 1990s I began to work with seven companies whose Chief Executive Officers (CEOs) had tasked their R&D and Legal executives with finding a way to “explain” their hidden value and ultimately move their stock price. After meeting with me and each other, the answer that ultimately emerged turned out to be understanding and utilizing their intellectual property and other intangibles more effectively and consistently. The industries represented in these initial meetings were quite diverse: chemical, insurance, pharmaceutical, defense, and high technology and included both U.S. and European companies. This group, now grown to roughly twenty companies, has been meeting regularly since 1995 to create, define, benchmark, and describe IP issues, and publish the results. This group, called “The Gathering”, has ultimately created a set of definitions, frameworks, and an intellectual property management (IPM) decision system. These tools enable companies to realize the

value of their IP portfolios more fully and to support the companies' corporate strategies and objectives.

In 2001, I co-authored the first book arising from the work of *The Gathering: Edison in the Boardroom*, and a new industry was born. IP was suddenly recognized as more than an artifact of R&D. Now, IP was treated as a value generator for the business. As the group has continued to meet over the 20-plus years, we have continued to learn so much more about IP and other intangibles, particularly their impact on technologies, markets, industries, and economies.

Starting in 2010, I began to focus on issues relating to China. A client project sent me to China to try and determine if the Chinese government would allow non-practicing entities (NPEs) to operate in China. As part of the project, I along with some colleagues, travelled to China and interviewed IP judges, legal scholars, and IP lawyers. What we learned was shocking. Legal scholars and lawyers told us that the Chinese government was forcing Chinese companies to engage in illegal activities when competing with their Western counterparts. Additionally, we learned that the Chinese government would only allow foreign companies to gain a small percentage of the Chinese market and would ensure they were ultimately unable to compete freely in the emerging Chinese marketplace. There were whisperings of a grand Chinese strategy to unseat the United States as the dominant global market leader.

This meant that the Chinese government was systematically undermining hundreds of years of intellectual property doctrines applied in the rest of the world. Historically, emerging and developing countries establish their own IP systems, grow IP awareness and sophistication within their home country, and ultimately open their markets, industries, and economy to free market competition. Until now, every country has followed this general playbook. So began my quest to understand what the Chinese government was doing and how it related to foreign companies, markets, industries and ultimately the world economy and U.S. national security.

I. IP AS A DRIVER OF ECONOMIC GROWTH

Both the Trump and Biden Administrations have made it abundantly clear that economic security is now national security. Many economists also agree. In a recent article about the Ukraine war, for example, Paul Krugman, a Nobel laureate economist noted,

“National power in the modern world has far more to do with economic strength than it does with military might and also reflects [“soft power”](#) — the influence of a country's values and culture. Even when it comes to military prowess, modern wars don't involve much hand-to-hand combat among guys with bulging muscles.

What they involve, mainly, are strategic duels using long-range weapons, aided by a lot of technology.”¹

In the latest [National Security Strategy](#), The Biden Administration stated,

“Technology is central to today’s geopolitical competition and to the future of our national security, economy, and democracy. U.S. and allied leadership in technology and innovation has long underpinned our economic prosperity and military strength. In the next decade, critical and emerging technologies are poised to retool economies, transform militaries, and reshape the world.”

The Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office (USPTO), Kathi Vidal, has been working to tighten the link between economic and technological competitiveness and invention, specifically patents. Currently as the Chair of the Public Patent Advisory Committee (PPAC)², an advisory board to the USPTO, we too are working to ensure that the link between IP and economic and technological competitiveness is explicit. Below is an excerpt from the 2022 [PPAC annual report](#) to Congress, which points out the dire situation we are currently in:

“In the 1970s, the U.S. accounted for roughly 70% of global research and development (R&D). Today, the U.S. accounts for only 16%, well below China’s 25%. The National Science Board recently reported that in addition to lagging behind China in R&D output, from 2010 to 2020 the U.S. share of international patenting dropped from 15% to just 10%. In contrast, China’s share of international patents increased from 16% in 2010 to 49% in 2020.”

The PPAC Report goes on to observe that before we can reverse this trend and compete with other nations that are truly focused on innovation, we must first acknowledge that the world is embroiled in a global innovation race that may be existential for many countries, including ours. The only way our country can compete in this kind of race is to broaden our base of innovators and encourage more Americans to participate in the invention of new and more diverse and disruptive technologies.

The USPTO has a substantial resource not currently being fully exploited that would be useful for assessing progress, i.e., patent data. Patent data combined with demographic data can help us visualize who is and isn’t participating in the ecosystem. It can also help focus efforts on how to reach and attract and incentivize underrepresented inventors into the innovation ecosystem. We can enhance our economic and technological competitiveness by focusing on ensuring inclusion in innovation and invention *processes for all future innovators*. Professor Lisa Cook, a former Edison Fellow for the USPTO and current member of The Board of Governors for the Federal Reserve, has observed that:

¹ “What Ukraine Teaches Us About Power”, Paul Krugman, New York Times, January 6, 2023.

² All my remarks are my own and not those of PPAC or the USPTO

“If we quadruple the number of inventors, we could increase the overall level of U.S. GDP by up to 4.4 percent. For some reference, 4.4% percent of the \$23 Trillion U.S. GDP in 2021 represents about \$1 trillion in potential annual growth to the U.S. economy.”³

Let me be clear. Invention is directly tied to increasing our national Gross Domestic Product (GDP). Maintaining and growing GDP is the job of Congress and the White House. That growth is under threat from adversarial nations. Even without the advent of foreign competition, strategies that would engage more Americans to participate more fully in our economic system is, in and of itself, a positive action. Given the threat from foreign competition, however, a counter strategy to negate that threat has become truly critical.

II. WHAT IS THE CHINESE GOVERNMENT STRATEGY?

In 2020, with co-authors Jeanne Suchodolski⁴ and Bowman Heiden⁵, we identified the current Chinese government strategy to undermine the economic stability of the United States. This Chinese government strategy, which we called “**Innovation Warfare**”, has been operating since at least 2010, and likely much longer. Our paper called out the need for an effective counterstrategy to negate this new threat. My hope is that at the end of this hearing, you will better understand and agree with this assessment. Below is a paraphrased summary of [Innovation Warfare](#) (bolding is mine).

*The Chinese government is currently utilizing a competitive strategy called Innovation Warfare, which is a systematic and coordinated effort to achieve technical and economic dominance through the use of **legal** and **illegal** means to misappropriate U.S. technology and undermine the innovation ecosystem and our broader economic stability.*

I believe this committee is well versed in the illegal ways that the Chinese government has been misappropriating U.S. IP, technologies, and data. Those efforts include counterfeiting, theft, trade secret misappropriation, espionage, hacking, and digital piracy to name a few. What is new and different is the way that the Chinese government is utilizing **legal** means to also gain access to our technology while also seeking to undermine our innovation systems and economic stability. Manipulating the IP ecosystem for their own gain includes:

- forced technology transfer,
- foreign direct investment
- venture capitalist investment,

³ 2022 PPAC annual report: <https://www.uspto.gov/about-us/organizational-offices/public-advisory-committees/patent-public-advisory-committee-ppac>

⁴ Director Innovation Protection Policies at the U.S. Navy

⁵ Executive Director at The Tusher Center, University California, Berkeley

- creating their own innovations,
- manipulation and use of the U.S. IP system (e.g., overwhelming the USPTO on trademark and patent applications to slow down all IP grants),
- use of courts and the Patent Trial and Appeal Board (PTAB) to eradicate patents while hiding/obfuscating real parties in interest (RPI),
- manipulating standard setting organizations,
- using international courts to try and set worldwide, artificially low, FRAND (fair, reasonable and non-discriminatory) license rates on standard essential patents (SEP) artificially low, thereby robbing U.S. companies of real rates of return (ROI) on their technology development.

All these issues fall under the purview of this Committee and should be reviewed and updated as part of a new strategic objective of utilizing IP to help keep the nation safe and prosperous.

What I would like to discuss more fully is how intellectual property offers the U.S. government a new tool to utilize in this strategic endeavor.

III. DISCUSSION OF PATENTS

A patent is a "negative" right. In theory, the owner of a patent has the right to preclude anyone else from using the patented invention, unless specifically authorized by the patent holder.⁶ Patents have another important attribute, as a technology control position. Returning to my Innovation Warfare article:

“Patents help innovative entities straddle the dimension of time. Savvy entities protect innovation value streams both in the present and in the future via a portfolio of patents. Many leaders think of intellectual property, and patents in particular, as simply a necessary defensive expenditure. But experienced leaders realize that intellectual property is a type of real option that connects current R&D investments to future benefits inclusive of the ability to control and manage outcomes at a later point in time. The difference between these two points of view is significant. Under U.S. law, a patent is a right to exclude others from making, using, or selling the patented invention. These rights mean that others must have the patent owner’s permission to practice the invention claimed in the patent. Therefore, the patent owner “controls” how the patented technology is to be utilized and holds the option to exercise that right throughout the life of the patent. Patents are, therefore, real options on control positions, or simply for ease of discussion, control positions. The real option nature of patents, however, nonetheless provides key insights on their optimum use as control positions. Entities file patent applications hopeful that the resulting patent may prove to be of some use or value in the future. Often one or

⁶ This was largely true until 2006, when the U.S. Supreme Court, in its wisdom, decided to increase the burden on patent owners to obtain injunctions, even against intentional infringers of valid patents. eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388 (2006). This case is one of several such cases that have led in large part to the decline in innovation.

more of these future anticipated uses of a patent, such as licensing, technology transfer, influencing standards-setting or other technology adoption, or stopping infringement, fails to materialize. In such a case, the patent option is null. But, if one of these uses were to come about, the patent option is “called” and the patent often assumes a significant amount of value through that use. That value, or future return, varies depending on the precise use and may not materialize at all. Thus, not all patents are equally valuable. Entities, therefore, try to file as many patents to obtain as many options to assert a control position in the future as possible. The first and most obvious means of using patents as control positions is to obtain them at all. Every such control position a U.S. entity obtains is one that its adversaries do not obtain. In the context of Innovation Warfare, patents can be used to own and control relevant technology future(s) for U.S. interests. Either a U.S. company can own and control a relevant patent asset, or the U.S. government can own and control the patent asset. In either scenario, a U.S. entity, not an adversary, owns and controls the patent asset.”

Most executives understand that patents are options on potential technology futures. Companies that are sophisticated about their IP strategy both blanket strategically interesting technology areas with patent options and take efforts to ensure that their desired technology future is one that the industry ecosystem will ultimately choose and accept. In my 30 years of consulting experience, I have either performed this capability for companies or I have embedded this capability within companies for their continued use. Below is a summary of lessons learned and how they can be applied to nation states:

Strategy Matters – no IP-savvy company decides to change the nature or direction of their business or industry without clearly defined innovation and intellectual property strategies that are aligned with their corporate strategy and objectives. This is also true for nation states. The Chinese government publishes 5-year IP plans and tells us specifically what their goals and objectives are for that period. Currently, the United States does not have a clearly defined national innovation strategy nor have we publicly announced any formal national IP goals or objectives. We have not filled cabinet level IP positions and the IP experts we do have across the government are not in agreement on the value of IP to the nation and therefore are issuing conflicting guidance to Congress and the White House. We do, however, have a list of [Critical and Emerging Technologies \(CET\)](#).⁷ As a nation, we no longer have the funding to create, own and control all the CET needed to ensure our national security. This presents a conundrum. As was mentioned earlier in the PPAC report, we are no longer the global leader in R&D or technology development. The shift of funding has also changed in the U.S., from 70% government funded R&D, 30% private funding in 1966, to 30% government funding and 70% private funding today.⁸ This means that, corporations, academic institutions and inventors are

⁷ <https://www.whitehouse.gov/wp-content/uploads/2022/02/02-2022-Critical-and-Emerging-Technologies-List-Update.pdf>

⁸ J. Suchodolski, S. Harrison & B. Heiden, Innovation Warfare, North Carolina Journal of Law & Technology, volume 22, issue 2: December 2020

now in charge of funding and creating the bulk of technology development in our country today. Because we are a democracy, we do not have the power of a centralized economy, where the government issues directives and all private and public actors rush to comply. Instead, we must consider how best to motivate the public and private sectors to work harmoniously to achieve a common objective. The most successful innovation directive outside of wartime, was the Kennedy Administration's goal of being the first nation to put a man on the moon. Not only did both the public and private sectors work together harmoniously to achieve this goal, but the subsequent innovations fueled continued economic growth for the next 20+ years. We are desperately in need of a new moonshot goal to unite both the public and private sectors in keeping our nation safe and prosperous.

Data is Vital – perhaps the most interesting aspect of adding IP into the national security toolbox, is the ability to use patent data to “visualize” the emerging economic and technological battlefields. Former Admirals and Generals that I have spoken with are very excited to be able to “see and possibly predict” where economic and technological battlegrounds will be in the future. Again, given the future oriented nature of patents, utilizing patent data allows us to visualize likely confrontations, issue course corrections and/or determine if government intervention is warranted. While patent data is useful, because it is standardized and collected by all countries with an intellectual property regime worldwide, it is currently only a static point in time measure. The Australian Strategic Policy Institute (ASPI) issued a report [*Policy Brief: ASPI's Critical Technology Tracker: the global race for future power*](#) which evaluates the state of critical and emerging technology of various countries. The research was partly funded by U.S. State Department's [*Global Engagement Center*](#). This report indicates that China leads in 37 out of 44 technologies and a key area where China excels in is defense/space-related technologies. The U.S. currently leads in high performance computing, quantum computing, and vaccines. These kinds of reports are helpful, but do not indicate whether the battle is lost or if change is still possible. The report does not make a value judgement as to whether the patents issued matter technologically or not. Companies could have received numerous patents on technologies that are tangential to our preferred technological future. More specifically, does the U.S. own key technology control positions or does an adversary? It is vital to understand where the U.S. stands vs. allies and adversaries across multiple technology trajectories for each of the critical and emerging technologies. Another important fact to note, for companies, what matters is what patents they own, or control compared to their competitors. Nation states do not own patents, therefore understanding the patent landscape and whether a given entity is owned or controlled by a friendly or adversarial nation state is critical and oftentimes difficult to determine.

There is currently a new type of forecasting analysis, Future-Oriented Technology Analysis (FTA), that combines patent data with business and technological data to provide predictive technology forecasting capabilities. FTA was created in Korea, and it is utilized heavily in China.

The Chinese government often provides this analysis to Chinese companies to help them utilize IP more effectively as part of their competitive strategies. The United States does not currently have this capability deployed meaningfully in either the public or private sectors. It is not clear who is tasked with creating and mastering FTA capability either. What this Committee can do, is to task the USPTO with exploring and understanding FTA capability and to work collaboratively with the Department of Defense (DoD) and the Department of Commerce (DOC) to ensure this capability is utilized for the benefit of the nation.

Top-Down Communications - In companies, when management starts a new and large initiative, top-down mandates are crucial to ensure that the employees understand and will comply with the new initiative. The same applies here as well. No one has effectively communicated the importance of IP to the nation.⁹ Nor that China is running a strategy to harm us economically and technologically, and that both Chinese and many American companies are unwittingly on the front lines of this new battle. Why is this important? Because as a whole U.S. companies have no idea this is happening or how it adversely affects them in the marketplace today or in the future. When messaging the problem, companies should be provided data about the size and scope of the problem. Companies should also be informed what tools are needed or have been created to assist them if they are being targeted or experiencing a competitive nation state issue. Identifying a defined agency in charge of collecting data from companies who experience or “see” Innovation Warfare behavior in their markets or industries is necessary. All these activities fall squarely within the confines of this Committee.

What Can This Committee Do?

1. Create A Plan

Given this new reality, we need a **new plan**, one that involves our Allies, to:

- a) make strategic public and private investments in Critical & Emerging Technologies (CET),
- b) message the importance of innovation and inventorship to companies and inventors in both the public and private sectors, and
- c) ensure continued western technology dominance.

2. Create a Consistent Narrative On How IP Can Help the Nation and Put Someone in Charge

Develop a clear understanding of how IP can help the nation. This Committee should charter the Department of Defense, the Department of Commerce and the USPTO to issue a joint report to Congress on how to optimize the IP ecosystem to help the nation utilizing patent data and Future-Oriented Technology Analysis (FTA) around Critical & Emerging Technologies and this Committee can then use that report to implement legislation to optimize the system towards improving national security and

⁹ Indeed, many academics, government officials and judges identify themselves as IP “skeptics.” Several Supreme Court Justices also fit into that group. Congress is the only possible institution to restore and revive an effective patent system if that is ever to occur.

competitiveness.

3. Put “Control” Back into the Technology Control Position

The concept of a **technology control position only works if patents can exclude**. Over the past 20+ years the Supreme Court has significantly eroded the ability of a patent to exclude others. Congress needs to restore this fundamental right and reduce the ambiguity across the IP ecosystem in areas such as obviousness, eligibility, claim construction, damages, and more. It is important that when making any changes to the IP ecosystem, Congress do so in ways that do not hinder industry’s ability to utilize patents in ways that create value for them.

4. Define a role for the USPTO in the Innovation Warfare Counterstrategy

IP data is a useful tool to help us “visualize” these new economic and technological battlefields. The USPTO currently has the data, technologically astute workforce, and the desire to participate in this new area. Congress should define an expanded role for the USPTO to:

- a) expand their existing analytic capabilities,
- b) help to define their role in the Innovation Warfare counter strategy and,
- c) require them to develop, utilize and share the results of FTA.

Congress should also expand the USPTO’s mandate to ensure inventor demographic data to collected to enable Congress to see at a more granular level, who is and is not participating in our innovation and inventorship ecosystem and better grow GDP and enhance national security.

Thank you for your invitation to speak here today, and I look forward to your questions.