MR. BROOKES: Just so everybody knows, that was Representative Lofgren from the 15th -- the 16th District of California. She was first elected in 1994 and serves on four committees: Judiciary, Homeland Security, House Administration and Joint Committee on the Library. She chairs the House Judiciary Subcommittee on Immigration, Citizenship, Refugees, Border Security and International Law. And we appreciate her being here with us today and for sharing her thoughts on these very important issues.

Let me get back to the second panel. Our third witness will be Mr. William B. Scott. He's an author and former editor of Aviation Week & Space Technology. In his 22 years working with Aviation Week, he also served as a senior national editor in Washington and in avionics and senior engineering editor positions in Los Angeles. He is a flight test engineer, graduate of the U.S. Air Force Test Pilot School, and a licensed commercial pilot with instrument and multiengine ratings.

Thank you all for being with us today. We look forward to your testimony.

General, if you would start, that would be great.
GEN. HORNE: Sure. Well, thank you very much for inviting us here today, Mr. Chairman, and all the distinguished members of the commission. This is my first opportunity to talk to you, and I certainly appreciate it.

I believe that this commission fills a very important role in advising Congress on our country's relationship with the People's Republic of China. And I appreciate the opportunity to share with you the views of STRATCOM commander, and my boss, Lieutenant General Willie Shelton, of the United States Air Force.

I serve as the deputy commander, as you mentioned, of the Joint Functional Component for Space, which we believe is the nation's global single point of contact for coordinating, planning, integrating, controlling and executing the operations of our Department of Defense forces.

I'm a soldier raised in the operational environment, serving in our Army's light air assault airborne divisions, European air defense units, and recently as the chief of fires and effects in the multinational corps in Iraq. I've also -- several joint interagency tours with the National Security Agency, NAT and two tours at U.S. Strategic Command, the latter in positions associated with space, missile defense and C4I mission areas.

It's from this experience that I can tell you unequivocally that space is clearly a domain, not purely an enabler, that produces the critical capabilities necessary to win our wars, protect our citizens and empower our global economy. It's also clear that our operational environment is changing dramatically every day.

We serve with soldiers, sailors, airmen, Marines, civil servants and superb industrial support community -- the best in the world. They are a dedicated and innovative joint interagency force working hard 24 hours a day, seven days a week, conducting our nation's space operations.

I sincerely stand in awe of their professionalism, commitment and savvy in understanding world affairs and the role that they play, even as junior enlisted members, in preserving our way of life. I'm humbled to work with them, and I find it incredibly valuable to link the experience and knowledge that the ground warfighters bring to this problem and the great operational strategic minds in the professional national security space profession.

The JFCC space team provides unity of effort across military, civilian, allied and full-spectrum space operations and we believe yields a tailored response of global effect to support our national security mission.

The space domain has fundamentally reshaped our lives in the last 50 years. Today we depend upon space-based capabilities to conduct commerce, advance our interests and defend our nation.
Space impacts nearly every aspect of our lives, as individuals and as a nation. It holds promise for exploration, enhances civil and military operations, including disaster relief efforts, and transmits an amazing array of global communications every day.

Today space can no longer be seen as either a sanctuary or simply an enabler. We've known this for some time. The space-enabled capabilities impact all war-fighting domains, particularly space-based communications and intelligence assets.

Space is more than an enabler, as I mentioned, it's also a domain. We must view space activities the same way we regard those in air, land and sea and cyberspace. As space-based capabilities provide critical support to forces in other domains, space operations must also receive the same support and protection from those very forces that they enable.

China's rapid use of -- rapid rise over the recent years as a political and economic power with growing global influence is an important element in today's strategic landscape, one that has significant implications for the region and for the world overall.

However, much uncertainty surrounds China's future course, in particular in the area of expanding military power and space assets and how that power might be used.

China continues to aggressively develop a wide array of space and counterspace capabilities. As they pursue widespread military capability advancement, China views progressive space and counterspace capabilities as essential elements of national prestige and attributes of a national power and a world power. Their current efforts include establishing a wide array of space, counterspace, terrestrial-based capabilities to provide reconnaissance, navigation, communications and support to all types of military and civil operations.

Recent People's Liberation Army writings also emphasized the necessity for destroying, damaging and interfering with the enemy's reconnaissance and observation and communications capabilities, suggesting that such systems, as well as satellites and navigation and early warning satellites could be among the initial targets of any attacks to blind and deafen an enemy.

China's space activities capabilities include ASAT programs and have significant implications for anti-access and area denial in the Taiwan Straits, contingencies and well beyond.

China does not have a discrete space campaign but views space operations as an integral component to everything that they do. To support their operations, the Chinese continue to build a space architecture consisting of a variety of advanced imagery, reconnaissance and environmental satellites. They currently rely heavily on foreign providers but are moving aggressively to assure their own capability for the long term, focused on placing more sophisticated and diverse sets of satellites into orbit and expecting to replace foreign-produced satellites in its inventory with those they produce themselves by 2010.
China announced traditionally ambitious plans to launch 15 rockets and 17 satellites in 2008. Although such predictions are seldom fulfilled, we need to pay attention to this.

Additionally, China announced its intention to launch a third manned space mission, the Shenzhou 7, in October 2008, on the heels of the Beijing Olympics, underscoring space development as an important symbol of national pride. They intend to conduct a space walk at this time.

The majority of the technology used in China's manned space program is derived from Russian equipment. And China receives significant help from Russia with specific satellite payloads and applications.

Unfortunately, not all of China's forays into space have been peaceful. In January 2007, China successfully tested a direct-ascent anti-satellite weapon, destroying a defunct PRC weather satellite. The unannounced test demonstrated PLA's ability to attack satellites orbiting in low-Earth orbit and raised worldwide concern. The resulting debris may put at risk the result, the assets of all space-faring nations in the future, including endangering human space flight.

Our dependence on space and the growing danger posed by numerous hazards requires that we proactively protect our space capabilities. To ensure freedom of action in space for all partners, we need to maintain an acute awareness of all space-borne objects, hazards and terrestrial threats to space operations and to enable and inform de-confliction, improve confidence and responsible actions in space.

Our adversaries understand the asymmetric advantage our space capabilities provide and also that it constitutes an asymmetric dependence that can be exploited.

Space situation awareness is a foundation to space protection, both of which preserve recognition and attribution. Space situation awareness is our number one operational priority. Our understanding of hazards elevates the need to detect, track, characterize, attribute, predict and respond to any threat such that we can observe, orient, decide and act decisively.

The analogy of a 1,000-ship navy built through a coalition of nations can be applied to space. And the ability to leverage and expand space partnerships with our allies holds the potential to dramatically improve space situational awareness.

Lastly, encouraging military-to-military dialogue through and beyond space situation awareness with all space-faring nations provides an important opportunity to increase understanding of each other's intentions and to pursue methods to improve multilateral cooperation.

Furthermore, understanding each other's specific perceptions and respective doctrines will ensure our force postures are perceived in their proper context, ensuring transparency
and building confidence in the protection and sustainability of numerous space capabilities.

China's recent vision endorsed by the 2007 Party 17 indicated an increasing desire to connect the technical world and the vision of a harmonious working relationship with world superpowers is an important aspect to this problem.

On the subject of space, it behooves all space-faring nations to work together for the peaceful advancement of this domain that has become absolutely critical for our global way of life. As space-faring nations, including China, increase their interaction in space, we must continue to seek greater engagement opportunities to better understand and create prospects for additional collaboration.

We live in a microsecond world characterized by fast, dynamic technological change with space operations, information and potential threats moving all at the speed of light. The United States' reliance on space capabilities across our military, civil and economic sectors coupled with the increased and diverse threats to our space assets requires real-time playbooks, trained and ready forces operating as a joint and interagency team 24/7 a day.

We appreciate your support, supporting the need for automated change detection tools, enhanced sensors, modeling and simulation tools, and command and control systems to facilitate rapid decision making and execution.

It's an exciting time to be in the evolution of our global space operations, and I'm truly honored to be serving with such exceptional men and women as they expertly tackle all the challenges that we face today.

Thank you for this opportunity and your continued strong support in all that we do and time to speak to this commission.

**MR. BROOKES:** Thank you, General.

Dr. Tellis?

**MR. TELLIS:** Thank you, Mr. Chairman, for the opportunity to testify before this commission on the issue of China's space programs.

After listening to Brigadier Horne, I must start by saying that I endorse almost everything that he said in his remarks, and I'm tempted to end my oral presentation on just that note. However, I think that would be a source of some disappointment to you all.

So I will proceed to summarize what is essentially a fairly lengthy paper that I've distributed for your consideration, basically by highlighting what I think are key conclusions that I draw in three basic areas. First, the characteristics of China's space
Let me start by saying that when one looks at the Chinese space program, it's useful to think of it in summary form as defined by three broad characteristics. The first is that it is a truly comprehensive program. China is not just another developing country that has capabilities that are discrete and isolated. The Chinese space program essentially is an end-to-end program. It has everything from space science to international cooperation, integrated into a whole, and designed to serve the purposes of national policy.

The purposes of national policy in this context are essentially the accumulation of Chinese national power and the hope that this accumulation of national power will once again restore China to being a major global power in the international system.

So the first element is its comprehensiveness. The second element is that the program is essentially integrated. It's hard to find within the Chinese space program any clear distinctions between the civilian and the military. In fact, many have characterized the Chinese space program as essentially being a military program which has certain civilian projects undertaken as part of that larger rubric. The important policy point of consequence of this reality is that any cooperation with China in space must be understood to benefit at some level its military capabilities.

So the second element is that the program is integrated.

The third element is that it is really a very focused program. The Chinese have refused to invest in space capabilities that involve the frittering of resources. Rather, they have tailored the program to meet very specific developmental and military needs. So don't look to the Chinese space program and how to see an isomorphic replication of what the U.S. space program looks like. It's a much smaller program, but because China's resources are constrained, it's a program that is tailored very clearly to meeting certain national goals.

To the degree that competition with the U.S. is involved in this program, it's a program that's focused on essentially acquiring technologies from any source at the lowest cost possible, and integrating these technologies so acquired to advance Chinese national interest.

Let me say a few words about China's military space capabilities, which is the dimension of the space program that assists Chinese military forces.

China's military space capabilities are essentially defined by its national military strategy, which is preparing for active defense in the context of local wars, which are fought under "informationalized" conditions. The essence of this framework is essentially to seek and secure, maintain information superiority in the context of a conflict.
Because this is the strategic aim of the Chinese military space program, the military space program has three basic dimensions. China seeks to develop a wide spectrum of capabilities designed to advance its conventional military operations. The second is that China seeks to develop capabilities that will deny its adversaries access to space. And third, because there is a clear understanding that space is central to information dominance, China recognizes that a struggle for space is inevitable, and therefore must prepare for it.

Given this fact, most Chinese military space investments today seem to be focused in three broad mission areas: developing capabilities for space support -- that is, essentially being able to launch systems of different kinds into space; providing capabilities that enhance forces, the application of military forces, primarily China's conventional military forces; and third, developing capabilities that allow China to deny the use of space to other more superior adversaries, especially the United States.

To make these aims possible, China has invested capabilities in five basic areas: a very impressive set of systems designed for space launch; a substantial tracking telemetry and control network; a large number of space orbital systems, primarily satellites, in different mission areas; a big investment, especially in recent years, with connecting China's space capabilities to its conventional military operators; and finally, a large investment, as the general pointed out, in counterspace technologies, which will only increase over time.

What is the net impact of these military space capabilities? I would urge you to think of it in terms of two dimensions.

The space capabilities that are focused on force enhancement primarily allow China today to mount a wide variety of conventional operations with a great deal of confidence, either within its borders or at some distance from its borders.

Over the next decade, the kinds of capabilities that are most certain to come online will allow China to apply force across a much wider special domain, to include by the end of the next decade the Chinese ability to project power throughout the Western Pacific, at least in certain specific war-fighting dimensions.

Where counterspace capabilities are concerned, the basic consequence of counterspace capabilities is that at least in the near term, it allows the Chinese to (hold at risk?) a wide variety of orbital assets, especially those that are in lower orbit. And as its counterspace capabilities gather steam, it will be able to target orbital systems at much greater altitudes but, even more importantly, to use space as one element in an integrated war-fighting strategy that will focus on both command of the electromagnetic and the cyber spectrum. And it is the synergistic use of space, electromagnetic attack and cyber attack that poses, I think, the greatest threat to our warfighters.

Let me end very briefly by giving you my sense of what the strategic implications of these programs are for U.S. national security. And I have five basic conclusions that I'm simply going to telegraph to you.
The first is that Chinese space and counterspace investments presage an increase in the vulnerability of key U.S. military assets, not only fixed military assets, but increasingly mobile military assets, especially power projection assets that have been the currency of U.S. power since the end of the Second World War.

The second point I want to make is that the growth of China's space and counterspace capabilities has sparked a change in the balance of power in the Asia Pacific and in the Asian continent more generally.

The third is that the growth of China's space and counterspace capabilities will contribute substantially to raising the costs of American victory in any future conflict with China. They will also have the consequence of expanding the special dimensions of the battlefield, both the virtual dimensions and the physical dimensions of the battlefield in case we are confronted with a conflict in the Pacific region.

And finally, the rise of China's space and counterspace capabilities will pose very specific challenges to American dominance in space, a reality that we have taken for granted for the last 50 years. And so managing China and its space capabilities will be a portion of a much larger problem, which is managing the rise of Chinese power in Asia.

Thank you very much for your hearing.

**MR. BROOKES:** Thank you.

Mr. Scott? Please proceed.

**MR. SCOTT:** Thank you for this opportunity to participate here as a member of this panel.

Can you hear okay?

**MR. BROOKES:** (Off mike) -- button there, if you'll push that.

**MR. SCOTT:** I did. Is it better?

**MR. BROOKES:** Thank you.

**MR. SCOTT:** Well, as General Horne and Dr. Tellis have already outlined, China has some incredible space and cyberspace capabilities. I'll try to add some perspective to their comments.

The People's Republic of China has a rapidly growing, robust space program operated primarily by the Chinese military. And the program's accomplishments are both impressive and the plans aggressive.
For example, China has a modern fleet of communication, reconnaissance and weather satellites and is developing its own space-based navigation constellation similar to the U.S. Global Positioning System. Most of these spacecraft have both military and civilian applications.

The Chinese Long March family of boosters has posted a 100 percent launch success rate over the last 10 years. China is developing a new line of rocket engines. Some will burn oxygen kerosene and others oxygen hydrogen fuel. They're scheduled to fly by 2010, and these new Long March-5's, equipped with these new engines, will give China heavy-lift, quote, "rocket capabilities comparable to the U.S. Air Force Evolved Expendable Launch Vehicle, or the EELV." That's according to Craig Covault, senior editor for my former employer, the Aviation Week.

And very soon, China plans to -- expects to launch a new generation of polar orbit weather satellites, carrying 11 sensors, spacecraft to be able to resolve Earth's surface areas as small 250 square meters and capture 3D imagery through clouds.

General Horne said China plans to launch its third manned space mission this October. And one of the three astronauts on that flight will conduct an EVA, extra vehicular activity, wearing a new space suit developed by Chinese engineers.

The nation plans to eventually build and operate a 20-ton-class manned space station similar to the Russian Mir platform. China's placed a spacecraft into orbit around the moon and is developing a small rover vehicle to explore the lunar surface around 2015. That may lead to a lunar sample return mission in the 2017 to 2020 time frame.

And, as we all know, in January 2007, China successfully shot down an aging FY1-C polar orbit weather satellite at an altitude of 537 miles, demonstrating a direct-ascent anti-satellite capability. That system has limitations. It's not particularly flexible. But a Chinese ASAT threat definitely exists now. It puts many in the U.S. -- many U.S. and allied spacecraft at risk.

General Kevin Chilton, commander of U.S. STRATCOM, says, "Space is no longer a sanctuary." And over the last decade, U.S. satellites and data links have been subjected to electronic jamming, laser dazzling, control network hacking attempts and other forms of interference. China has been responsible for several of these "soft" attacks, demonstrating both the willingness and a capability to target U.S. spacecraft and control networks.

So clearly, China has become a world-class space-faring nation. But that nation's excessive secrecy forces us to ask, what are China's motivations for developing a robust space program? Should we view it as a threat or as an opportunity?

On the threat side, China has developed relatively low-cost asymmetric capabilities to disable our communications, navigation, weather, ISR resources by disabling or destroying key satellites with an ASAT missile. But China may also pose a stealth threat as well. It may already have launched a fleet of micro or nano satellites and positioned
them in close proximity to critical U.S. communications and missile warning satellites in geostationary orbit, for instance. Because our space situational awareness resources are limited, we might never find these tiny killer sats until they strike.

From a national security perspective, prudence dictates that U.S. military leaders view China's growing space presence and capability as potential threats, then find ways to counteract them. However, we need to be very careful in exercising counterspace measures.

For example, in our second "Space Wars" book, a fiction which is to be released later this year, my co-authors and I explore the ramifications of disabling Chinese imaging satellites. We show how temporarily blinding the PLA spacecraft as a means of protecting our own naval forces could unintentionally lead to a shooting war.

So on the opportunity side, U.S. political leaders and citizens should be -- or would be well served by viewing China's space ambitions from a cultural standpoint. Historically, China has been a major world power, and many of its people believe China is now reassuming its rightful place as a leader. They also have been going to school on what constitutes a global power today: large, powerful military; growing, vibrant economy; educated work force; and a successful space program.

It's important to understand that all these elements are also vital symbols, and symbolism is a cornerstone to Chinese culture. In fact, some China experts maintain that an accomplished military commercial space program is as much a symbol aimed at garnering the support of the Chinese citizens as it is to threaten the U.S. and other space-faring nations.

Most of all, China wants to be respected. Chinese citizens feel that rather than being congratulated for its rapid development of successful rockets, satellites and lunar probes, for example, China is repeatedly chastised for human rights shortcomings.

In January, Aviation Week and Space Technology chose Qian Xuesen, the father of China's space program, as the magazine's person of the year. That generated a flood of hate mail from outraged readers. But cooler heads saw the choice for what it was: recognition of a man's and a nation's considerable accomplishments in space. Similar forms of recognition and demonstrations of respect might pave the road to space program cooperation and mutual understanding.

To that end, maybe we need -- we Americans need to stop sending conflicting signals. When it comes to China, it seems we haven't decided whether to pursue a policy of containment or one of engagement. Actively promoting cooperative space programs, where appropriate, might simultaneously foster engagement and what could be termed deterrence through information.

For example, if we show China's leaders that shooting missiles at other nations' satellites would create so much orbital debris that nobody could safely launch a spacecraft for
decades, perhaps they'd think twice about firing another ASAT. In short, engagement in
dialogue would enable our sending this message loud and clear: conflict in space would
be a catastrophe for both the U.S. and China, so let's not go there.

Finally, we need to recognize that millions of Chinese citizens admire and greatly respect
America. However, U.S. leaders are on the verge of turning those millions of Chinese
citizens into rabid America-haters. How? If we boycott the 2008 Olympic Games. If
Congress or the administration prevents U.S. athletes from competing in Beijing this
summer, again China experts that I know say it will be viewed as an affront to every man
and woman in China -- the ultimate humiliation of a proud people. Their hatred will
persist for a generation or more and manifest as a very expensive space race for us and
further extension of China's military reach.

The 2008 Summer Olympic Games are China's coming-out party, and refusing the
nation's invitation will trigger a host of unintended consequences. So to avoid launching a
very costly space race, we must curb ineffective human rights rhetoric and allow U.S.
athletes to compete in Beijing. Only then can we hope to find new ways to foster U.S.-
China cooperation in space.

Thank you.

MR. BROOKES: Thank you very much.

We're going to move to questions now. I have a number of commissioners who would
like to ask questions. If you could all give me a finger if I don't -- a note -- (laughter) --
raise a finger and let me know that you want to ask a question during this. If we could
just go one question per commissioner in the first round, that would be great. And my
prerogative as co-chairman this morning, I'll ask the first question.

And I ask this to all of the panelists. The Chinese have made some noise about a new
outer space treaty -- perhaps on weaponization of space. Nobody seemed to mention that
this morning and I would be curious as to -- of the three panelists -- as to what you
believe the motivation is behind the Chinese desire for a new space treaty.

I'll let you guys decide who's going to respond first.

GEN. HORNE: Well, I'll be the first to say it's probably well beyond the realm of my
knowledge of their intentions for the space treaty, but I'd just offer to pick up on a line
from Congresswoman Lofgren. Any opportunity to discuss with other nations a way to
ensure the peaceful utilization of space would be a positive exchange, from my
perspective. I think one of the things we need to encourage from the Chinese certainly is
transparency, and that might be a way to get after the discussion and have an open
dialogue with them in that particular aspect of their operations.

MR. TELLIS: I think there are two elements to the Chinese interest in what is called
PAROS, or the convention to try and outlaw weapons in space. The first is the diplomatic
-- securing the diplomatic benefits of taking a position that argues for an arms control regime in space. I mean, there are very clear benefits to be seen as opposing weaponization of space -- trying to construct a peaceful space environment through legal arms control regime. And so there is clearly a diplomatic dimension to the Chinese effort.

But I think there's also a very practical dimension. They seem to have tabled a draft that focuses very much on outlawing weapons in space. And to my mind, that is an insufficient instrument because it focuses on just one-half of the threat. It's silent about the threats to systems in space that are not based in space -- threats that exist on the ground. And for the foreseeable future that is, in fact, the most demanding class of threat. We may reach a point somewhere down the line where we have to deal with the issue of weapons in space, but for the moment, that's not the problem.

And because the Chinese instrument, it's a joint Russian-Chinese instrument, focuses so much on weapons in space, one is led to at least ask questions as to why this enormous amount of diplomatic effort is being put into kind of addressing a challenge that's really not very pressing. And the only answer that my cynical mind can come up with is that it's probably focused at at least making life difficult, for example, for the U.S. ballistic missile program, because some of the definitions in the treaty instrument really go after components of the U.S. ballistic missile program.

And so I see this, again, as part of a larger effort to seize the high ground diplomatically while not really solving what I think are the most pressing challenges to space security today.

**MR. BROOKES:** Mr. Scott, do you have any thoughts on the issue?

**MR. SCOTT:** I would just echo the other two speakers, but I think if we look into the Chinese history we should proceed very cautiously. We hear them saying one thing, but you have to wonder what they're doing behind the scenes. Even as they laid this proposal on the table, you know, they conducted an ASAT test. So, in short, I think we should listen very closely to Teddy Roosevelt and follow his advice: speak softly, carry the big stick.

**MR. BROOKES:** Okay.

Commissioner Blumenthal?

**DANIEL A. BLUMENTHAL (commissioner):** Yes, thanks a lot to all of you for testifying before us today.

I have a question in terms of how to conceptualize information superiority or supremacy and the space aspects of that type of warfare. Would it be -- is it possible for the United States to be able to maintain information or space supremacy, superiority in the way that it does in the air or in the sea? Is that the right way to think about it?
And the corollary to that is, is information warfare -- of which you've all described space as a part -- an independent form of warfare, like some argued airpower was, strategically? And, if so, going back to my original question, can the United States maintain, like it does in the air, superiority over space and the information or electromagnetic spectrum?

That's for all of you.

**GEN. HORNE:** Well, I think you've hit upon one of the great debates certainly in the Pentagon. The Air Force's view, I believe, is that space supremacy, superiority is definitely something that should be sought, if you will, and I'm sure that we would put cyberspace into that same type of a discussion set.

I guess I would offer the notion that what we have to ensure is our freedom of economic, political and military action to defend our interests, and that as long as we can ensure that then that's what we have to proceed. But if you proceed in the notion that you just gave us, about outer space treaties and whatnot, the talk of supremacy or superiority doesn't necessarily lend itself to that type of a discussion.

So I think it's the notion of, if you regard space as a domain -- just like you do air, land and sea -- you have to approach it with the standpoint to ensure that your forces, your military can achieve its actions and labeling it can be sometimes inflammatory and maybe not particularly helpful. So I would focus from an operational perspective. As long as we can support our forces, get them the information they need to accomplish their objectives, then we're right where we want to be, and labeling it may not be the best approach.

**MR. BLUMENTHAL:** (Off mike) -- on that. Why is it different than -- I mean, Air Force doctrine, everybody knows, in the United States is, or military doctrine is, we are not going to engage in operations until we have air superiority or we try to maintain superiority over other domains or the commons. Why is the information spectrum different, or the electromagnetic spectrum different?

Any one of you can answer that.

**MR. TELLIS:** I wouldn't make the argument that it's different. I think the real distinction is whether the domain -- whether it's space or the electromagnetic spectrum or the cyber environment -- whether the domain is a sanctuary or not. If it is a sanctuary, then competition can take place entirely by peaceful means and the outcomes are determined simply by the relative differences in technology. If it's a sanctuary, then the technology that we use to get information is essentially safe and if I have better technology than you, then I have better information and hopefully I can use that information more effectively.

If, however, you change this boundary condition about whether the domain is a sanctuary, and it becomes contested, then you need more than technology. Then it's not simply a question of whether I have better technology but whether my technology on balance --
that is, relative to all your efforts to interfere with my use of the technology -- allow me to do what I want.

And so I think that is really the critical question. Now, to the degree that we are moving into a political environment where space is going to be less and less of a sanctuary, I think we will have no alternative but to think in terms of information superiority in purely relative terms. That is, even as we are collecting information that enhances our ability to conduct military operations, there are others going to be about trying to prevent us from using that information. And so we have to deal both with the positive uses of the information, which is how do I make my, you know, military outputs more efficient, and I have to deal with negating the efforts that the other guy is making to prevent me from accumulating this information in the first place. If this is the world that we're confronted with, then I think the vision of space will become very soon analogous to the conceptions that we have of air control and sea control and I guess ground control, if someone can articulate what that means.

MR. SCOTT: Commissioner, I would just add that perhaps this idea of space supremacy -- let's just stick to space for a moment -- is a bit of a misnomer, and when you use the analogy to air superiority, I think it comes down to a question of when. When we talk about space supremacy, it seems to be received oftentimes as we establish it now, let's say, and then it's there forever. And that is very inflammatory to many other people. But if we look at it from the standpoint of having the capability to establish space supremacy in the event of a conflict, not unlike what we do with air power, then that capability, I think, can be viewed as a deterrent, so people would think twice about trying to, quote, "take the high ground" at any time if they knew there was the capability in America's hands to not allow that and to ensure that everybody has access to the high ground.

MR. BROOKES: Commission Fiedler?

JEFFREY L. FIEDLER (commissioner): Thank you. I have two quick questions.

Since January 2007, have we gained any greater insight into the Chinese decision making on the ASAT test? We had some hearings right after that, didn't have a lot of insight. Has anybody gained any insight in the ensuing year and a half, or year and three months?

MR. SCOTT: I'll just quote my former employer. They had an article in last week's magazine that said the consensus is moving more and more to the position that Chinese leaders now think that was a miscalculation and that they really didn't appreciate the degree of backlash that they would receive. So I think there is a certain level of regret there. At least that's the impression that a lot of the China watchers have right now.

MR. FIEDLER: Is that recognition that cutting out the Chinese farm industry was a mistake?

MR. SCOTT: I can't address that.
MR. TELLIS: I think there's a general recognition that the consequences of the test were very problematic to the kind of regime you want to maintain in space. They were also problematic from the point of view of China's desire to maintain its standing as a responsible player in the international system.

I'm not sure that this equates, however, into a regret about pursuing the program itself, and I think one needs to make a distinction in that regard. The fact that the Chinese have a program I think tells you something about their intentions. The fact that they chose to test that program in the way that they did certainly in retrospect seems to be something that a wide variety of Chinese interlocutors seem to regret, but that distinction is very important.

MR. BROOKES: General?

GEN. HORNE: Thanks.

I think it may be indicative of something that's maybe a little bit more symptomatic, and that is that China's pursuing a broad-based, comprehensive transformation of its military and space as a piece of that.

We've mentioned before that essentially they have a pretty good knowledge management process, that they're able to work with many communities and frankly have put together a pretty impressive program since the late '90s. That doesn't necessarily mean that they understand the full ramifications across the spectrum of that particular realm. Understanding it technically is not necessarily understanding it across the diplomatic, informational, military, economic aspects of it.

And there are cultural challenges worldwide in grasping that too, and I relate that back to the discussion just a moment ago of I think it was space superiority, space supremacy. My colleagues mentioned the notion of technology is great, but you have to understand how to apply it across the spectrum, something that we call DOTLMPF, a terrible acronym, it's tough, but it is about doctrine and organizational and training and a cadre that fully understands how to operate within an environment and facilities and goes through the full spectrum of this business.

I think whenever you do something fast, you also leave out some of the details. And I think that's fundamentally probably what the Chinese are experiencing. This is a pretty big, pretty interdependent environment and maybe their actions had to be sorted through a bit more than they earlier anticipated. And that approach is something they're going to have to take a look at.

MR. FIEDLER: Thank you. Just one quick follow-up to what you all said, that there's little distinction between the civilian and military use. That seems to me to create some serious problems for us in defining what is dual-use technology in terms of our exports involving space and our cooperation should we engage in it. Is my concern valid?
MR. TELLIS: It is absolutely valid. I mean, at a purely technological level itself, it's hard to look at dual-use technology and make clear judgments about where it could be used. But when you look at the Chinese program, which is such an integrated program across the civilian and military domains, it's even harder. And when you multiply the problems caused by opacity, the lack of insight into organizational decision making and chains of command, it becomes even more burdensome.

My own prejudice in this regard is, you know, better to be safe than sorry. If we decide to make dual-use technologies available in any context, we have to make those decisions of malice aforethought where you basically have to do the calculation that says even if this technology so transferred was used to ill purpose, do I have the means to cope with the consequences?

And if we can kind of make that calculation, I think that's the only way to deal with this challenge, because I don't think you're going to get an essentialist solution to try and figure out what can be transferred and what can't. Thank you.

MR. FIEDLER: Thank you.

MR. BROOKES: Commissioner Wessel?

MICHAEL R. WESSEL (commissioner): Thank you all for your testimony today. I'd like to understand, if I can, a little better, taking this from concept to reality, I guess for potentially our troops on the ground. I think, Dr. Tellis, you indicated, I think, to quote you, was, "The struggle for space is inevitable," and some discussion of electromagnetic implications.

Space increasingly, or the electromagnetic spectrum, seems to be an integrating factor for our troops on the ground, whether you're looking at predator aircraft aerial views, other integrated information assets that our troops have. Should we be looking at this not just as another sector, not as another service domain, but really as an integrating factor? And aren't the implications of Chinese activities even greater here? If they were to detonate or use electromagnetic pulse weapons, for example, over a battlefield, wouldn't it create enormous operational problems for all of our activities across the domains?

General, if you could start?

GEN. HORNE: Well, I guess I'll start out -- anytime someone detonates a nuclear weapon or generates an electromagnetic pulse anywhere in the world it's going to create some pretty significant implications for everyone involved. And I think that in and of itself may be a deterrent. If they are to conduct that type of activity in space, it's going to create very significant implications for them as well.

When you take a look at the growth in their space program, given that they've got about 20 spacecraft on orbit in about 2005 and they're going to grow to somewhere about 90 by 2018 by their projections, it's kind of a double-edged sword. The more they invest in
space they more they depend on the very capabilities that they're trying to build, the more they emulate what we do, the more vulnerable they are as well.

So as they grow more into this particular environment, they're going to find that they might even be restricting themselves just a bit, not to say a word about, as you just mentioned, about the economic and political impacts of activities in that regard. So uniquely enough, maybe the more they invest, the more they experience their own restrictions that they would impose upon us.

**MR. WESSEL:** But it is -- we should not be -- am I correct that we should not simply view it as a separate domain, because it does cross cut? Understanding the risks you just said, that unlike ARC, et cetera, that space now has implications for all of those other domains.

**GEN. HORNE:** You know, domain is another one of those emotional words within the military context. I'd take you back to the 1970s, when General DePuy laid out something called "airland doctrine." It was the beginning of jointness as we know it, that wasn't really fully imbibed until, frankly, Grenada taught us just how limited we were in terms of our interoperability.

And that set us forth on a path of jointness from 1983 to 1991, such that when we prosecuted Desert Storm, we had unprecedented levels of understanding of how the domain of air, land and sea interrelate.

So when people talk about space as a domain, I really think that they're talking more of a construct of you need to bring that as a fourth or cyberspace as a fifth entity into that -- what was called airland doctrine, because the world is much more complex today. We have a compression problem; we're all swimming in a sea of information every day. And that's going to do nothing but get worse in the days, weeks and months and years ahead.

So I think the context of a domain is not to isolate it, to say it belongs to a service, but to more relate to the idea that if something has to interrelate with those military aspects -- and frankly from an interagency perspective across the whole diplomatic, informational, military and economic perspective. And I think that's where we're at today, frankly, is we've grown well beyond jointness and now it's about interagency and international allied cooperation at the same level.

So I believe that you're going to see in the next 10 years a move towards interagency domain interrelationships, if you will, of which we're just acknowledging that space is a very key aspect of that. So it's not to isolate it, it's to say that you have to develop it across that DOTLMPF that I mentioned earlier and to bring it into the interagency as an integrated component of our national power.

**MR. WESSEL:** Thank you.

Either of the other witnesses?
**MR. TELLIS:** I wanted to add a different dimension to the issue you raised. I think you put your finger on what to me is really the critical criterion, which is what is the impact of any innovation, especially military space on war-fighting outcomes? I think that should be the question, because if you ask it in that way, you begin to see space in this integrated sense, that it's not space but it's space as it affects other inputs, as it were, into the process.

In this context I think we ought to keep in mind that while the kinetic elements are sexy, you know, the EMP, the ASATs, there are a whole range of technologies out there which are not kinetic; they're more in the soft dimension, but could nonetheless have very serious consequences for your war-fighting outcomes.

And so when one thinks in terms, for example, of jamming technologies, or when one thinks of being able to interdict the link elements between an orbital system and its ground segment, these have real consequences. If you can cut off troops from their communications or from their visibility of what is happening on the other side of the hill at crucial moments in the battle, in the evolution of the battle, you could make a difference to the outcomes even though all the elements of the puzzle are physically intact.

And so I think it's very useful that we use the criteria of the impact on war-fighting outcomes as a good metric to judge the significance of innovation. And then we focus not simply on the kinetic systems or the systems that have kinetic effects but the softer systems as well, which can be just as consequential.

**MR. WESSEL:** Mr. Scott?

**MR. SCOTT:** An EMP is a pretty devastating attack on our forces in the field, for sure, you know, at all levels: strategic, operational and tactical. And after such an attack you have to assume that those of us who were very heavily dependent on our space assets for sure would be basically blind, deaf and mute in the near term. So it would have tremendous impacts on the military services as well as the civilian sector. And more and more for our war-fighting, particularly communications capabilities, we do rely on that civil sector for commercial satellites to carry a lot of the noncritical communications, traffic, for instance.

So I think one of the keys is that what the Pentagon has to do and obviously is doing is you plan and prepare to, number one, write it out if you can, protect as much as you can. But then you also have to figure out if you do suffer a certain amount of degradation, how do you keep on operating? And the old term "graceful degradation" comes to mind because, you know, you have to have plan B, C and D to keep on operating and do it efficiently.

So that's planning, equipping, training for all of those eventualities that -- in our second "Space Wars" book we do start it off with an EMP from a high-altitude detonation. And things get messy in a hurry.
MR. BROOKES: Thank you.

Commissioner Shea?

DENNIS C. SHEA (commissioner): Thank you all for being here today. Just a quick factual question, and then I just have a question for Dr. Tellis.

On the factual side, could you tell me how much the PRC spends on space and counterspace activities and whether that amount is included in their annual defense budget?

MR. TELLIS: There are various estimates. The most conservative estimate, which Joan Johnson-Freese, I think, has deduced, is about 1 to 2 billion dollars. The more liberal estimates are close to $5 billion. The problem, however, is that these numbers refer to what is nominally in the space program, and there is much investment in counterspace that does not come under the space program budget. It comes under other black components of the national budget.

And so I think all these numbers have to be taken with a certain degree of caution because they're not indicative of the scale of the program. But having said that, the bottom line is this, the Chinese space program is relatively small compared to the United States. I mean, nothing changes that fact with respect to what the disagreements are. But we need to be cautious about the numbers.

GEN. HORNE: I agree with everything that Mr. Tellis just said. I'll add just a couple things.

One, you have to look at how they get their information to build the satellites in the process they're doing. They so far have not had to invest quite the amount of research and development other countries have for the last 40 years to get to where they are.

So I mentioned before the notion of knowledge management. They're pretty good at that - pretty impressive efforts so far. Now, innovation -- that's yet to be proven. And so innovation usually involves investment to get people all the way through the educational process and then to engender a certain culture to achieve that. Again, not necessarily dollars- and cents-oriented, but you can see how many of their countrymen that are in schools around the world in this particular area and you'll be pretty impressed.

Then I'll also add the notion of labor prices aren't what they are in the United States.

MR. SHEA: Right.

GEN. HORNE: And they don't have a profit motive. So you add all that together and, you know, 1 to 2, 3 to 5 (billion dollars) becomes quite a bit less relevant. And then I'd say what you really need to focus on -- so what capability are they really putting on orbit? And frankly, just as importantly, what are they doing on the ground to be able to leverage
that capability to put on orbit and measure that? And that probably might be the litmus test; the effect that they're actually achieving with that program might be the ultimate measuring stick we might want to use.

MR. SHEA: Thank you. Okay, second question: Dr. Tellis, you mention that the Chinese -- it was very helpful. You mention there are three elements or characteristics of the Chinese space and counterspace activities: they're comprehensive, it's integrated, and it's focused. And I was hoping you could just flesh out the third element -- focused. Focused on what? Focused on a particular military contingency, or if you could flesh that out just a bit.

MR. TELLIS: It's -- I use the term "focused" in multiple ways. It's focused first in the sense of it aims not to replicate the U.S. program. There is a certain economy of logic that the Chinese have used in how they've structured the program. They're focused on elements that are important to China. And so I think the prestige elements of the program are things they're happy to benefit from, but I think they think of those as externalities. They're focused on those elements of the program that aid either national development directly; hence the great emphasis on communication satellites, on meteorological satellites. They've focused on those elements that aid the military program directly. So it's focused in that sense rather than, you know, developing a large, sophisticated program for its own sake.

The second element of the question of focus is that they do want their space program to satisfy certain operational military objectives. And so they have, recognizing the fact that they are not as sophisticated, for example, in microelectronics, and outside the field of developing boosters, their satellite technologies have not been that sophisticated, so given these realities and the fact that they're operating in a universe that is still primarily dominated by the U.S., what does focus require you? Focus requires you to target technologies that you don't have but which are available elsewhere. And so the Chinese route to innovation, as it were, is really by two joint technologies: borrow through a lot of activities that are conducted by Western multinational corporations in China, and essentially steal. And if you listen to public testimony that has been offered in the last year or so, there's been a clear recognition that Chinese espionage activities, primarily in space and dual-use, have been at an all-time high. Again, this element of focus.

So I use the word "focus" in a sort of an omnidirectional way, because there are many components to it.

MR. SHEA: Thank you.

MR. BROOKES: Thank you.

Commissioner Videnieks?

PETER VIDENIEKS (commissioner): Good morning, gentlemen.
**Quick question:** The definition of sovereignty as viewed by PRC to be almost infinite and limitless, going up to (the heavens ?), and our definition as to ability to navigate or use, utilize space, is that an inherent conflict in whatever scenario we ascribe to the future? Whether it's conflict or cooperation or managing their space program -- does this have to be resolved -- all three of you -- does it somehow have to be resolved in the way of a treaty?

**MR. SCOTT:** Well, I'll take the first shot at that. That may be one realm that we could initially engage the Chinese on in a diplomatic way. Perhaps rather than jump all the way to what they're asking for right now -- the no weapons in space, et cetera, et cetera -- would be to revisit the way we first dealt with the Soviet Union. And that's part of this deterrence through information I mentioned: that if they fully understand that transparency has some real advantages to avoid conflict, then over-flights, for instance, in space can have a calming influence. That's just an initial thought, sir.

**MR. VIDENIEKS:** At this point, though, they have taken a position that they own space infinitely above their borders.

**MR. SCOTT:** Then maybe it's time we engaged them and discussed that a bit.

**GEN. HORNE:** Well, I agree with that. I think you're at the leading edge of discussions on how you deal with this new domain, as we talked about just a moment earlier. So I think we just deal with it from the standpoint, this is very early in the process and engage them. Help them see the dichotomy of their very own doctrine, where at one point they say blind the enemy, that conflict is inevitable, and then say that they don't want to have weapons in space. It just doesn't seem to correlate to something that a prudent person would take a look at as a rational approach. So you engage them and talk to them about that.

I think another aspect of it is -- you mentioned the Cold War. I say display the same level of resolute commitment to being able to maintain your capability throughout the spectrum of conflict. And to do that, of course, we've mentioned space situation awareness, and I'll take yet another opportunity to thank you and Congress for all the great help that we've been given so far and just here recently, inside the last year, on space situation awareness. That's the first aspect.

Then you have to invest in the ability to make sure that you can conduct graceful degradation, which is a well-used term, and I can tell you, given that I deal in it very day, we do that every single minute of every single day, working our way through challenges that we see. But prove that you're better at that than anyone else in the world. Then I'd say you might want to also prove your commitment by your ability to reconstitute. If someone wants to conduct an act that you think is clearly inappropriate -- some people would say an act of war by dedicating some type of a kinetic impact -- show that you have a displayed ability to take care of that situation and get assets back on orbit, whether they be air or space, and you can do that in a very quick fashion and be very public about that.
So I think it's a level of, again, using every arrow in your quiver to convince somebody that it's probably not the best investment in the world to go --

**MR. VIDENIEKS:** To take that -- to use that definition, to claim space infinitely above their borders as domain.

**GEN. HORNE:** I think that's a lure that we don't need to bite on.

**MR. VIDENIEKS:** Dr. Tellis?

**MR. TELLIS:** I agree with the last proposition entirely, that if this is the position that the Chinese have advanced, and there are Chinese military theorists who've talked about it in that way -- this is obviously not a position that we can countenance or support. But to me, I think the real challenge is not their conception of sovereignty, because I think that is in some sense -- you know, one can have a conversation about. The real problem is the actions or the strategies that they seek to employ to defend what they believe is their sovereign right. And it's these actions, to the degree that they destroy the notion of space as a sanctuary that become problematic for us.

If we can all agree that it is in our common interest, both Chinese and the U.S. and globally, that we protect space assets, because it's not only relevant to military operations but also to larger economic issues, I think we will all come out ahead. The question is, what do you do when you are confronted with a rising power that has very strong political equities that are non-negotiable and seeks to defend these political equities from what is essentially a position of conventional military weakness. And because China faces itself -- finds itself in this situation, it looks for workarounds that allow it to overcome the limitations of conventional military weakness. And what it is doing in space is essentially a design to equalize, in a sense, the disadvantages that it currently enjoys. And so it's the actions taken in defense of sovereignty rather than some atypical notion of sovereignty itself that I think is at the heart of the problem.

**MR. VIDENIEKS:** Thank you.

**MR. BROOKES:** Thank you.

Commissioner Mulloy.

**MR. MULLOY:** Thank you, Mr. Chairman.

Thank you all for being here with this very helpful testimony.

Mr. Scott, on Page 4 of your testimony, you tell us, historically China has been a major world power. And many Chinese believe the period from 1860 to 1949 was an aberration in China's long history, an inward-looking phase that allowed others to become world powers. And you say that China is now resuming its rightful place as a world power; at least that's their understanding of what they're about.
You further tell us that America, in China's eyes, is an immature late-comer, a nation that somehow rose to greatness, despite its seemingly chaotic, unstable two-party political system. So it seems to me that the way you've phrased that, that isn't somewhere where they want to go, because they look at it as chaotic and unstable.

Mr. Tellis, you make the same -- I think a similar point on Page 2 of your testimony. I want to put this in a larger context to what we're doing here. You say, China's space program represents a major investment aimed at enabling Beijing to utilize space in expanding its national power. And you say -- and we've heard this before -- the expansion of comprehensive national power has been China's grand strategic objective since at least the reform period initiated in 1978, and that this is critical to China to recover the greatness that it enjoyed for a millennium.

Okay. So here you've got a country that seems to have a game plan. And the game plan is to achieve and restore itself to kind of numero uno, I think.

Now, is it in the United States' national interest to help China expand its national power? And if not, or maybe -- well, one, I guess I'd ask you that, all three of you. Is it in our interest to help China expand its national power?

Maybe I'd start with you, Mr. Tellis, then Mr. Scott.

And then, General, if you feel free to comment, I know you're under constraints when you get into this kind of thing.

MR. TELLIS: Well, I think the short answer to that question is no.

MR. MULLOY: Okay.

MR. TELLIS: The long answer is a little more complicated. Because if it was a binary choice between helping them increase their national power versus not helping them increase their national power, the answer, I think, to me, at least, would be obvious -- you don't.

MR. MULLOY: Well, then let me -- Mr. Scott, can you answer -- is it -- and then I'll come back. Do you think it's in our interest to help China achieve its national --

MR. SCOTT: I'd have to step sideways on that, sir, and say I don't think we have a choice.

MR. MULLOY: Okay.

MR. SCOTT: They're on track to do that sort of thing.

MR. MULLOY: Right.
**MR. SCOTT:** Then I think we go back to what Dr. Tellis was talking about, is how do you work with that? How do you manage, as much as you manage, and deal with it?

**MR. MULLOY:** Here's my sense. China has a game plan. I don't mind them -- and I, you know, I'm not hostile to them growing, as long as it's not at our expense. But I get a sense that there's a tremendous transformation going on here -- an economic, technological, other powers moving across the Pacific at a pretty rapid pace. They have a game plan. My sense is we have none and that some of our policies are assisting them in achieving their and growing their national power quite rapidly and maybe diminishing our own.

Do you have any comments on that, Mr. Tellis and Mr. Scott? Am I -- is that a correct perception?

**MR. TELLIS:** Well, let me reframe, I think, the problem. I think this is the point I wanted to make earlier. When I said it's not a binary choice between helping them or not helping them, I think it's not a binary choice because their growth today is inextricably linked with our own. I mean, this is what globalization seems to have done to the international system, that it has made their growth fundamentally dependent on their connectivity with an open economic system, which we value, which we protect and which we encourage. And so if one tried to prevent China's growth, I think we need to be honest enough to recognize that there would be a penalty that we would pay in terms of our own economic advantage. There is no way to avoid that situation.

So in this environment, what does one do? I mean, this is really a question of grand strategy, and what kind of a grand strategy do you pursue when you have political competition in an interdependent world? And I don't have a perfectly thought through end-to-end answer, but I think there are two or three elements that I think we need to pay attention to.

The first thing we need to do is make certain that our crown jewels are not diffused, so I do believe that there are some technological capabilities that the United States has, which, no matter what our commitment to free trade is, ought not to be freely traded away.

The second element is I think we need to pursue some kind of a competitive strategies approach, which is even as China grows through its connectivity with the international system, including our own economy, we need to make certain that we can stay ahead of the game and in fact increase the distance that we have between ourselves and all the rest coming behind. And you do this essentially through fundamental changes that you make within the United States in our innovation system, in our investments, in higher education, especially science and mathematics and engineering, things like that.

The third element of the policy that I think you follow is that you try and maintain relations between the U.S. and China and relations with other countries around China's periphery on what I think of as an equilibrium. You don't want relations between the U.S. and China to in a sense sink or end up in a "confictual" situation if we can avoid it. But a
key element to securing that outcome, I think, is to make certain that the alliance
relationships that we currently have with various countries in Asia and the proto alliances
that we are building in different ways with countries who are not formal allies remain in
very good repair.

And I think it's some combination of these three elements that allows you to deal with the
issue of competition in the world of interdependence.

MR. BROOKES: Thank you.

Commissioner Esper.

MARK T. ESPER (commissioner): Well, thank you, Dr. Tellis. You answered the
question I was going to ask and I'd still like to ask of the other two, and that is, what --
given the commission's mandate to make recommendations to Congress, ways to improve
our position vis-a- vis China, what policy recommendations would you make? So I'd like
to hear from Mr. Scott and General Horne on that, and then take it really one step further
maybe for Dr. Tellis, since he's off the hook on that question now. And that is, given your
points you make about a grand strategy -- and they make perfect sense -- how then in a
globalized world does the United States harmonize its policies and positions vis- a-vis
China with its allies and partners? And it gets down to the issue with the EU, so that
there's an appreciation of this ongoing competition and where that may end up for all the
Western countries.

So it's a two-part question, Mr. Scott, General Horne, if you can answer first what two or
three policy recommendations you might make to Congress to address the issues we've
been discussing this morning, and then lastly, for Dr. Tellis, the harmonization question.

MR. SCOTT: I would just go back to this -- decide which it is, engagement or
containment, and let whatever the decision is guide our policies that come out of that. To
bring it down, though, to a very basic thing, General Bob Stewart -- he was the Army's
first astronaut. He flew the shuttle and, you know, was a spacewalker, too. He summed it
up very nicely for me. He said it really comes down to, you know, there's room on the
world stage for any number of large powers, and as long as we help shape that perception
so it's not a zero-sum game -- you know, either you're number one or we're number one,
that sort of thing. So the engagement aspect helps us work on that.

Like you said, the other thing we really have to keep in mind all the time is that China is
huge in many, many ways, so they have three times as many people as we do, and you
know, you want to avoid conflict if you can. So always dealing with a smile on your face
and a firmness as well is probably the best way. Now, how you shape that into policies is
a challenge; I understand. But first, we have to have that guiding principle. Is it
engagement or is it containment? And I think we really don't have a lot of choice but to
work towards engagement where we can.
GEN. HORNE: Okay, I'll be the first to say I'm going to speak to you as a soldier. I'm not going to speak to you as a policymaker, and I wouldn't be so presumptuous as to say that I should make policy recommendations from this point, because I'm in an operational environment today.

I think the advice that was just delivered is probably pretty sound from the standpoint that this is a very, very large, potentially very powerful member of the international community. And foremost, you have to take on the aspects of what is a pragmatic, prudent approach to dealing with that potential? So -- and to put a little bit of a spin on a very well-known comment, keep your friends close and those you're not sure about closer.

So I would encourage transparency on the Chinese part. I would encourage us to have a methodology of discussing concerns that we have in a way that's not -- that's helpful. And I would always keep in the forefront of our mind that when you have something you depend on and you protect it as if your life depended on it -- and I would ensure that we have the ability to do that. And if for some reason that's threatened, I would ensure that you have the ability to respond both in active and passive ways, but certainly be able to reconstitute the capability that you had so that you can continue to prosecute and defend your population.

And lastly, I'd say we're engaged in a war -- a war on terror. And I think at the forefront of that is, what is our country based on? And that is the freedom to pursue your life the way that you want and to maintain human rights. And I believe that might be the thing that guides us in our relationships with others. As long as we're engaged from that aspect, that we're trying to promote the very values that our volunteer force serves under every day to protect our country, and we engage to promote that first and then to ensure our ability to protect those citizens, then that's probably where we need to be. So if any country is promoting those type of values, we work with them a certain way. If they're not, we figure out what the advantages are to both and we deal with it in a prudent fashion. And that may be a little bit vague and obtuse, but from someone who's been in harm's way recently, it's really basic.

When you look at our soldiers, sailors, airmen, Marines and civilians that are serving overseas as contractors and whatnot, in the end all they want to read in the newspaper is that their country is doing the right thing by others every day, and they know that they're out there fighting for that every day. And when they see that, they'll go on forever. So just make sure that we come across, as we have with many of our actions, that we're preserving human life and the right to dignity and pursue your rights every day of your life. And we'll always be on the high ground. Thank you.

MR. TELLIS: You've asked the most difficult question, because I think it challenges us to think about how we can advance those objectives that I just laid out a few minutes ago, and I think there are three broad dimensions I want to flag.

One is we can't do it unilaterally, because globalization has put us in this box. I mean, in some sense, dealing with the Soviet Union was so much easier, because they were not
interdependent, and so containment was so easy to operationalize. We don't have that option today. So the allies become relevant because globalization gives the Chinese the opportunity that if we acted unilaterally, they could go to others, and they will go to others to get technology, to get access, to get a whole range of things.

So how one manages our relationships with allies becomes critical. I would argue that there are several elements here that we need to keep in mind. The first is, we need to have a sustained conversation with our allies about what the stakes are. That is, we need to reach a common understanding of what the rise of China means not simply for the United States but also for their own security interests. There's often a temptation, primarily among our European allies, to think of the rise of China as something happening out there. You know, it's in Pacific Asia; it doesn't affect us directly. You don't have to convince the Japanese and the Russians and the Indians that this is significant, but the Europeans are a different matter. And the Europeans become critical because this really is a repository of high technologies. This is a center of innovation in the global system of some consequence.

So we need to talk to our friends and allies, especially the Europeans, about what the stakes are and the need to be able to develop at least some minimal common basis for how one deals with China. At the very least, to my mind, what this conversation must end up with is an understanding about how we manage technology transfers and arms sales, because we don't want to be in a position where, as we are attempting to protect our interests for China and the Asia Pacific, other doors get opened to the Chinese with respect to tech transfers and arms sales that completely undermine the efforts that we are making in terms of controls.

This is extremely unfashionable, and people don't want to hear this, but I really think we have to think of some successor to a COCOM kind arrangement, not aimed necessarily at the Chinese alone, but essentially, what are the crown jewels that we collectively want to protect because they are important to us? So I think that is certainly an element.

There's another element of working with allies, and that is, you've got to make fundamental political commitments to strengthening our allies themselves as they seek to develop, you know, a good working relationship with China. And we've got to work with our allies to strengthen others who may not be formal allies of the United States but are very important for the outcomes that we want to secure in the Asia Pacific. And again, we can't do this sitting out of Washington. It has to be done with, you know, real engagement with our European and our Asian partners.

The last element I think that completes the whole story is that we've got to continue to engage with China. We've got to continue to emphasis that an open economy, a political evolution that goes in the direction that, you know, the general just emphasized, respectful persons ultimately, is something that's going to make the U.S.-China relationship more manageable, I mean, to the degree that China evolves in that direction. Many of our concerns about China, they won't disappear, but they will certainly be attenuated.
And so I think what you need is, in a sense, this package deal, where we consciously renounce unilateralism because it's not going to succeed on this question. We work with the allies in terms of understanding stakes, developing regimes that help protect our interests, and involve commitments to both strengthening the allies and working with the allies to strengthen others. And then we, finally, continue to work with the Chinese themselves in the hope that their evolution will move in a direction where, you know, they become full partners in a way that we hope they can be.

**MR. BROOKES:** Thank you.

And I want to thank our witnesses for sharing their thoughts with us today on this very important issue.

*The commission will reconvene at 1:00 p.m. for the panel on cyberspace. (Sounds gavel.)*

END.