

Center for Strategic and International Studies (CSIS)

Preparing for the 2014 Quadrennial Defense Review: The Future International Security Environment

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CLARK MURDOCK: Well, right before our noon presentation by Steve Hadley, we had a presentation by our economists and budgeters – a dismal science. We have a lot in the way of fiscal constraints. I'm sure that the review of the nature of the security environment that we're going to have to deal with will allow us to do – you know, we often talk about doing more with less. Some of us like to say, I think it's really about doing less with much less. And I think our international security people are going to tell us, well, there's a lot – much less to do now that the wars are over. Isn't that so? Well, perhaps not.

I want to thank everybody for being here again. And we'll begin with a perspective from the NIC. Steve Hadley actually touted your study and said we should begin there as our starting point. So if I hadn't been about to choose you, I will now.

MATHEW BURROWS: Well, thanks so much for inviting me. And I hope that, you know, we'll live up to the advertisement that Steve Hadley gave us for the global trends work.

I distributed around – you have, I see, on your table what we call Le Menu. Le Menu on the global trends, basically, if you open it up gives a spread of the structure, key points, key issues that we have dealt with in the broader work. Global trends work is freely available on the NIC website. In fact, if you just Google, "Global trends 2030" it immediately comes up. It's – we put it out there so you can upload it to iPads. It's completely unclassified. And also, if you need hard copies, we can get those to you.

I won't in this presentation -- because we got several other panelists here; we have constraints on time, I won't go through the whole work. I wanted to present you really four key points, which link up several different trends. But I was trying to put myself in your position of what you need to know as you're starting off on this next QDR. What has changed in the general strategic environment that you need to think about as you do this?

First point is the relative decline of the West is speeding up – accelerating. So now if you look at Japan, North America, Europe, we comprise about 55 percent of world GDP. In 2030, it's going to be somewhere between 28 (percent) and 34 percent. That's a huge drop. This takes into consideration that Chinese growth is going to be coming down, probably by 5 percent by 2020. It also takes into consideration the boost we'll probably get from shale gas, shale oil.

This is a matter of these emerging economies – particularly China – getting huge. It's the same way with compound interest. They are growing and they will continue to grow for some time at a much quicker pace than our economic growth or economic growth of our partners. And particularly for Japan and Europe, they're struggling even more with aging, the entitlement issue. We are in actually a better position – although sometimes you wouldn't know it from the discourse that goes on in the country. But that gives you an indication. If you're looking at others budget, we have a graph in the global trends which shows, you know, that non-OECD defense budgets are expected to be

higher than OECD budgets sometime during this period. Huge dramatic change, obviously historic in the sense that, you know, we haven't seen this, what you – the Asians would call the re-rise of the East since the 18th century or before.

Second big tectonic shift: I would call this upcoming period the age of the individual. We started our work talking about individual empowerment. I think there has been a dramatic shift towards the individual, away from the state. You know, state is not going away. I actually think there is more pressures and strains on the state. So one of the issues – and I won't go through it, because I think Peter will talk about new technologies – but one thing that you have to keep in mind is individuals have access now to lethal disruptive technologies in a way that was not the case, you know, decades ago. They have the ability to cause, you know, damage, violence on a scale that used to be the monopoly of the state.

Now, there are a lot of very good things to say about the age of the individual. And most of the work we – when we're talking about individual empowerment, is actually on the other side of the ledger, which, you know, we can expect a lot of good things from this. But we have to, I think, in intelligence, in defense, in law enforcement have to keep in mind also the other side of the ledger. And equally, when you're thinking just not of lone individuals – that certainly is a concern – but think about two networks. So criminal networks, huge issues if you're looking at long-term trends in terms of conflicts, you know, the casualties that are caused through criminal violence – what we have seen in Mexico and other places – as actually on a much steeper incline than anything we've seen from interstate or intrastate conflict.

Third major point is that we, looking at, I would say, the threat of a double whammy of resource stress and population explosion in a major part of the world. So you know, we used to talk about the arc of instability. I think it's still there. We can talk about – and we do in the work – talk about at both ends it's beginning to narrow a little bit. But in countries like Nigeria, Pakistan, probably in either ends of the arc of instability, you're seeing population of 40 percent or so increase over this next period of 15, 20 years. So they're still – they haven't really gotten into the demographic transition. And certainly, these are the countries that are still expanding rapidly in terms of their population, whereas the rest of the world is beginning to age quite quickly.

They're also the place where, because of a combination of factors of population – but also climate change, where that is beginning to hit – where there's going to be major resource stress, so in terms of water and food. And you know, these areas of resource stress extend far beyond it, but I would particularly point to these countries which are experiencing the population explosion, and which happen to be also experiencing the climate change and the also lack of governance in many ways. You know, we talk in the work that this is not a world of scarcities, except or unless you take real proactive action by governments. These are the places where we don't expect, necessarily, governments and other bodies to take the needed proactive to prevent really getting into a world of scarcities.

OK, the fourth one is discontinuous change. And if you read the work, we begin with a quotation from Maynard Keynes, that said it's, you know, it's human nature to avoid thinking that the future is going to be anything different from the present. We can think very easily about incremental change. We all do this when we're thinking about, you know, progress advancement, so on. But it's very hard for us – and that includes the analytic community – to think about discontinuous change. And yet, I think, again, we're entering a period where discontinuous change is going to be more the norm than the incremental variety.

So I'll give you a couple of examples: One is on the frequency of extreme weather, which has a lot of implications. Again, you're looking at the resource question. I mean, we're beginning to understand that the models don't give us sufficient good idea of extreme weather; it's frequency. They tend to be trying to talk about where the mean is going to be. We know that is we're in a warming cycle. We talk about, you know, the increase in warming, but that doesn't give you the idea or really, the indication of just the variations that are happening and the extent those variations really are affecting a larger and larger amount – a proportion of people and amount of physical space.

I think the other big factor here is the interconnectiveness. You know, we talk – we have talked about this for some time, about little things happening that have huge impact. That cannot be ignored, but we don't know how to connect, often times, these small events to second, third order impacts. We've got to be very aware, as we do our scenario planning, about these, you know, what appear to be very unlikely events, having a – occurring. They will. We have a series of black swan things that we particularly have to think about going forward in 2030. I would urge you, as you do your scenario planning, to really focus on these – what appear to be very unlikely occurrences or events.

The final thing is the speed of transition. You know, the system really is in transition. So many things are happening – so many tectonic shifts are happening at the same time, you really don't have a system. Certainly one – you don't – haven't achieved a level of normalcy in anything, so there's so many things that could shift during this transition, in part because of how quickly it's happening.

That means that leadership is going to be very important. And you know, small events – as I've just said – are going to be magnified in that sort of environment.

So I'm going to stop there and welcome any comments, questions. Certainly, more than happy to delve more deeply into some of these topics that we – that I kind of ran over and just managed to get the – to the surface.

MR. CLARK: Thank you very much. A hard world to plan for.

MR. BURROWS: Yes.

MR. CLARK: A hard world to do QDRs in.

Dr. Zenko.

MICAH ZENKO: Thank you so much for the opportunity. From my last name, I'm used to going last. And when I go last, I'm often able to say that I agreed with everyone that spoke before me. So going second here, I'll have to lay the ground work for smarter people speaking after me.

I say this as someone who has the honor and the privilege of thinking and writing about these issues for a living, without any of the responsibility that you all have in terms of actually creating work plans and writing doctrine and writing strategic guidance. So take this in the spirit as somebody offering ideas and not somebody responsible for what I've said.

I just wanted to make three – I think three quick points on the international security environment broadly. The first one has to do with one megatrend that you see emerging in U.S. domestic politics and the U.S. economy is the increasing transition of wealth and employment from the government to the private sector. If you look actually at the numbers, after the Cold War the size of the government, it's growth from the early '50s on sort of plateaus to a couple percent a year. And since then, it's the two years it's largely – the size of the government has sort of stopped growing. And the other trend is that the percentage of GDP wealth that is held in the government versus the private sector is started to shift. And so you're going to see more of what makes the United States wealth and opportunity in the private sector.

And the question that I don't see being discussed much in forums like this is: What is the role of the U.S. government in protecting the private sector from security threats? So one example of this is commercial shipping, which is the cost of piracy is something like \$7 billion a year. And the United States Navy, as you all know, maintains about four to five ships out of something like 100 deployable ships that it has to – dedicated specifically to anti-piracy missions.

Now, the question is, what is the – why should the U.S. Navy be doing this? And Andrew Shapiro, the assistant secretary of state for Pol-Mil, pointed out last year: Not a single ship with privately contracted, armed security personnel has been pirated. Not a single one. The cost of a four-person, 40-day security crew is about \$65,000. And obviously, the cost of keeping four to five Navy ships out on patrol all this time is substantially more.

So the question is, what should – what should the U.S. government – what preventive measures should the United States government demand of commercially – or U.S.-flagged commercial shippers? And right now, there's basically none. It's industry-wide standards used to the extent they want. The shipper decides how much security he wants to provide. And then insurers and risk re-insurers decide at what cost they'll provide them insurance.

A similar example to this is the financial world, who increasingly wants protection from complex and sophisticated cyberattacks. Now, it's pretty interesting to me, because they make two demands. One is they one to be protected from cyberattacks and they want no federal regulations of what steps they should take to protect themselves from cyberattacks. So if the – if two banks exchange money, physically, they provide their own protection through Brink's trucks and armed security guards. But if they exchange money over wire transfers, they want the NSA and the Defense Department to provide them protection.

And I think – you know, the Ponemon Institute is a really interesting think tank. They did a study of how can private sectors protect their network system. And one of – the study they found is that you can – any industry can protect itself from 95 percent of all cyberattacks or cyber exploitation, if they increase their cyber security spending sevenfold. Now, assuredly, that's a costly measure, but as more and more of, you know, cyber spending is something like going to grow 7 (percent) to 9 percent every year over the next 10 years projected, what role – what should the United States demand of the private sector to protect itself from security threats? And what is the proper role for the U.S. military to do so as well?

Second broad issue is what role or influence does the United States have on the international security environment? When I – in a lot of settings like this, the United States is described as sort of existing in a vacuum. And threats occur to it and challenges occur to it and the United States has no role in shaping those threats or security challenges that it faces. And this is, you know, this is a really interesting phenomenon, because I'm talking to more and more U.S. officials and sort of national security analysts at think tanks who will tell you that nothing that the U.S. says or does can have enormative influence on other actors. Other people just act in their own power or interest anyways. You heard National Security Adviser Hadley say at the lunch, you know, if the U.S. reduces its nuclear weapons, this isn't going to change the behavior of Iran or North Korea. I think he's right, but Iran and North Korea aren't the only two people that we care about who have an opinion of us in the world.

And so one of the activities I've spent the last four to five years looking is U.S. increased use of targeted killings, which I was talking to a bunch of European embassies about – who are just fascinated with the United States justification and use of targeted killings. And there is no European Union country that agrees with U.S. policy. They don't agree with the justification; they don't agree with the scope of the conflict; they don't agree with the legal interpretation. And when these legal offices asked the United States which body of law applies to targeted killings, the official Obama administration position is that all applicable – that U.S. direct actions meet all applicable law, but they will never state which law they're referring to. So very specifically, when they're asked if it's international humanitarian law or law of armed conflict, the official U.S. response is that these are reinforcing and complementary bodies of law, which is not an interpretation other people accept.

And so the question then becomes when other countries develop the ability to conduct lethal strikes with unmanned zones inside other's territory, if they accept and they internalize U.S. justification and policy and the threshold for using lethal force outside of their borders increases – as it – or is lowered, as it has been in the case of the United States – that might not be the world we want to live in. And when you talk to a lot of senior officials about what impact drone strikes are having on others and what long-term, normative impact they could have, you will often hear: Somebody needs to be thinking about this. Somebody really has to think this through seriously because – because this is an important issue. And President Obama has said this as well, but when you talk to people who actually are the people who are inside of the program, obviously, that's not their job.

Sort of a similar issue could be made with offensive cyberattacks. Just yesterday – you probably heard on the Early Bird this morning, General Dempsey was interviewed by Ted Koppel at Rock Center and he was asked: "Imagine if some entity had the capability of using drones against the United States. Are we prepared for that?" General Dempsey: "Yeah, I think we're prepared for that. I think maybe it's an inevitability." He then asked, "Hypothetically speaking, if we're using cyberattacks against the Iranians, we have to assume the Iranians would use it against us." And General Dempsey again said, "That's a valid assumption."

And so one thing that the QDR might want to look at is if you're going to conduct kinetic-like offensive cyberattacks; if you're going to stick with the targeted killing program on the same scope and intensity as the Obama administration has done or has increased, what normative influence does it have on other people – and not just Iran and North Korea, but countries whose cooperation and diplomatic assistance we need for a range of national security objectives?

So last issue is the – what I call the – you know, there's no such thing as the international security environment, right? International security environment is a socially-constructed concept. It is only what each individual thinks it is. It is only – and politically, it is only sort of the environment that is empowered. My own personal belief is that many national security analysts and academics and policymakers and think tanks engage in chronic threat inflation for their own material interests, and it's also just the accepted conventional wisdom that the United States faces an ever-increasing range of complex and coordinated and sophisticated threats to its security in the homeland and to diplomatic personnel and U.S. interests. And as I often point out, the chairman of the Joint Chiefs of Staff, General Dempsey, says that the world is a more dangerous place than any time since he's been alive. He was born in 1952. I would posit that, for example, the Berlin crisis of the late '50s and early '60s or the early '80s when, you know, there was tensions and the Soviet Union had 30,000 to 40,000 nuclear weapons, fairly close to – could've been used in a lot of situations of unintentional use, that the world is actually a safer place than it was at any time since 1952.

And so you know, this goes to the issue of what should the U.S. military be doing, because the U.S. should only have a grand strategy based upon actual threats. So one

thing I would just urge you to keep in mind when you hear panelists like me and you listen to people characterize and describe the international security environment, it's important to understand that they have their own material and sort of ideological interests at heart to do so. And the United States – what you would hope the QDR does is sort of separate the wheat from the chaff. What are actual threats to the U.S. homeland? And what threats, specifically, are those that the U.S. military is tailored to interact and to counter?

So I would hope, as the people who actually think this and have to write this go through that, to keep that in mind. Thank you.

MR. CLARK: OK. As your representative of one of those (threatened ?), I'll turn to another threatened player. Mike.

MICHAEL S. CHASE: I've never had that as my introduction before, Dr. Murdock, but thank you. (Laughter). And thanks for inviting me to join this panel this afternoon.

I'm going to talk about Chinese military capabilities and some of their implications for the United States. I'm going to talk specifically about how the Chinese think about countering U.S. military intervention, the capabilities that they're developing to do that and then what it means for us.

But to provide a little bit of broader context, I mean, first of all, I don't think that a military conflict between the United States and China is very likely. I think it's actually very unlikely. If it does take place, I don't think that it will be because leaders in Beijing woke up one morning and decided that the balance of forces has shifted such that they could use force or the threat of force to force Taiwan to reunify with China on their terms. I think if something happens, it's much more likely that it would be the result of some kind of miscalculation stemming from one of the maritime territorial disputes along China's borders, whether Senkaku Islands dispute with Japan or perhaps something in the South China Sea. So don't take any of this as threat inflation. Take it as a, you know, that there is certainly a possibility of miscalculation that could lead to conflict, even in the absence of really anyone thinking that it was in their best interest to go down that road.

The other important bit of broader context I think I should provide is that although I'm going to talk mainly about China's concepts and capabilities for countering U.S. military intervention, China's modernization of its military is, of course, a much broader undertaking. It's one that – you know, as most people in this room probably know – has been fueled by very large increases in China's defense budget over the past 20 years. But it's one that's intended to enable China to protect its interests at home, near its borders, but also increasingly, its growing global interests.

So when we think about what the Chinese military is doing in a larger context, we have to think about the new historic missions that Hu Jintao assigned to the Chinese

military on 2004 – of course, when he was still the general secretary of the Communist Party, the chairman of the central military commission and China's president. And those missions require the Chinese military to do a bunch of different things, right? It's not all about coercing Taiwan or countering U.S. military intervention. They talk about what they refer to in their literature as diversified military tasks, which means the PLA has to be able to deter or win wars close to home. But it also needs to be able to protect China's growing interests abroad. And so whether that's through counter-piracy operations in the Gulf of Aden; another example would be evacuating Chinese citizens from Libya; or humanitarian assistance and disaster relief missions, potentially in the future, these are all types of things that the Chinese military needs to be prepared to do. And that set of missions also includes a greater focus on protecting Chinese interests in space, cyberspace and the electromagnetic spectrum.

So again, I'm just asking everyone to keep in mind that what I'm talking about today is only a portion of what the Chinese military is doing. And that although I'm focusing principally on areas that are potential threats to U.S. interests, some of China's growing capabilities, I think, also do create some opportunities for greater cooperation between the United States and China that might put our military-to-military relationship on a sounder and more sustained footing and that might contribute something meaningfully to a more stable and constructive and productive U.S.-China relationship in an even broader sense. So I want to make clear that this shouldn't be taken as all bad news, even though most of what I'm talking about today is kind of in the vein of potential threats to U.S. capabilities and interests.

As far as the concepts underlying (this go ?) in China, if you read their military doctrinal literature, they do not talk about A2/AD – anti-access and aerial denial, except when they're referencing U.S. publications and trying to translate it clumsily into Chinese. So what they actually talk about is countering military intervention by a strong adversary, which is us – they're, you know, being polite about it by saying "a strong adversary," but you can basically read that as the United States in most of those publications. And when they talk about this, they don't talk about it just sort of arising out of the blue. It's that there is some other crisis or conflict going along that poses some kind of threat to Chinese interests. The Chinese military has been ordered by its party leadership to defend China's interest in that conflict and they're now facing a threat of U.S. military intervention. So that's kind of the strategic context in these publications.

So when might they need to counter U.S. military intervention? The Chinese military writes about a bunch of different types of campaigns that they think that they might be called upon to execute. A blockade – presumably a blockade of Taiwan; an island landing campaign, which you know, probably would be across-strait invasion. They talk in some of their literature about a coral island reef seizure campaign, which, you know, presumably would refer to something like the South China Sea. So you can imagine that any one of these scenarios arises. And if there is a threat of U.S. military intervention, or actual direct U.S. military intervention, then they have to be prepared to counter that. And that's kind of how these types of concepts and capabilities are described in their own doctrinal literature.

As for the objectives: If they're ordered to counter U.S. military intervention, well, the first preference is to deter that intervention in the first place, to try to, you know, raise the risks or potential costs to a level that we don't believe that it's worth getting involved and taking on some of those risks. But if deterrence fails, then the aim of counter intervention is to blunt U.S. military intervention in way that ensures it doesn't prevent China from achieving its military or its political objectives.

As for the kinds of capabilities they're developing, I think many of these will be familiar to people who have read the annual reports on Chinese military and security developments that come from the Office of the Secretary of Defense. But here we're talking about a range of conventional ballistic missiles, the kind of accuracy and range and lethality of these has been growing over the years; anti-ship ballistic missiles, which have received a lot of attention recently; land-attack cruise missiles; attack submarines – both nuclear powered and diesel, electric and air-independent propulsion attack submarines capable of firing anti-ship cruise missiles; a much more modern surface navy composed of multi-mission ships, as opposed to their older, less capable, generally kind of single-mission-oriented ships that characterized their navy in the past; computer network and electronic warfare capabilities; offensive counter-space capabilities. And I think that also – picking up on some of Mr. Hadley's comments and Elaine Bunn's comments earlier today – nuclear-deterrence capabilities that are relevant to countering intervention either by deterring it in the first place or by deterring kind of further escalation following U.S. military intervention. So I think that's part of the picture as well. And so we can't really ignore the modernization of their nuclear force when we talk about how they would think about deterring or countering U.S. intervention.

I'll talk just very briefly about a few of those capabilities in some more detail. I mean, certainly we could spend a lot more time than we have going through all of the capabilities that they've been developing over the years. The conventional missiles, I think it's important to understand, are really not just for conventional precision strike. They're also for deterrence or intimidation, if need be. And so the conventional military capabilities, I think, play a much larger role in how China thinks about strategic deterrents than they did in the past – whether it's an anti-ship ballistic missile or a, you know, medium-range or intermediate-range conventional ballistic missile, these have something to contribute to deterrents from a Chinese perspective, not just to war fighting. And it's important to kind of keep that in mind, as we look at the ways in which they're extending the power and the reach of their conventional precision strike capabilities.

I'll talk briefly about the counter-space capabilities too, because I think sometimes there's a little bit of a perception that it's kind of all about the direct-ascent ASAT that China tested in January 2007, but it's really much broader than that. And again, if you read some of the China and military power reports, you know, you'll read that they have a much more multidimensional program, that it's grounded in improving their space situational awareness capabilities. And of course, having an ability to identify and track satellites is really a prerequisite for conducting counter-space operations precisely and effectively. And they're doing that.

They're also looking at other types of counter-space capabilities. If you look at their doctrinal writings, I think there is kind of a preference for what we would call soft kill types of capabilities, meaning things that are reversible like jamming. And again, if you refer to some of the China military power reports, you'll see that they're developing a wide range of jamming capabilities. Again, very consistent with what they write about in their doctrinal literature.

As for the nuclear deterrents capabilities – I mention these not to suggest that China thinks about this in the same way that the Russians do, because I think that nothing really could be further from the truth. But to suggest that they think about nuclear deterrents as being very important in a couple of respects, one of which is what the Chinese refer to as countering nuclear coercion. In other words, they feel as they they've been subject to nuclear threats in the past. And that having a more survivable nuclear force with greater striking power will kind of immunize them from being subject to such threats in the future. So that's kind of job number one for nuclear weapons from a Chinese perspective.

But they also talk about them as, in some sense, constraining the – some of the kinds of high intensity conventional attacks or conventional attacks against strategic targets that an adversary like the United States might consider in a conflict with China. And that's not necessarily inconsistent with their no-first-use policy. I mean, I can read, you know, I could bring doctrinal literature here that talks about Chinese nuclear capabilities deterring conventional escalation. It doesn't necessarily say it would make sense for them to escalate to the nuclear level in response to conventional escalation. What it says is that their survivable nuclear capability should give an adversary some – at least some second thoughts and maybe some third thoughts about doing things to them that, for example, we might do to a countries that don't have that kind of nuclear deterrence capability.

So what are they doing with their nuclear force? Again, it's – you could look at it in a couple of different ways. I mean, you could say that the size is increasing rapidly, but of course, that's from a very low baseline. So they're – you know, how you want to characterize this, I think, depends on how you see the role of nuclear weapons in China's national security strategy. I see it as still relatively limited, but they certainly are increasing the size and sophistication of their force. They're transitioning to a force that has a larger of number of road-mobile ICBMs, which of course, will be harder to find and more survivable. And that's the exact reason that they're deploying them. They've been looking at this problem really since the 1980s, I think, in more or less the same way. And are now kind of realizing some of the objectives that they laid out in some of their strategic literature of the late '80s.

Their new class of ballistic missile submarines is entering service with the Chinese navy and it will eventually have the submarine-launched ballistic missile that goes with it. So they'll have at least an operational nuclear dyad composed of their land-based missile force and a sea-based nuclear deterrent. And also, you can read about this

in some of the China military power reports, as well as seeing some pictures of it on the Internet. And it's a new mobilized ICBM that appears to be under development and could be capable of carrying multiple independently targetable re-entry vehicles. So that would be another important step forward in the kind of survivability and striking power of China's nuclear deterrent.

Again, tactical nuclear weapons don't really appear to kind of figure into this discussion. It's really about strategic nuclear deterrents, but it does have a relationship to countering U.S. intervention, so I thought it was worth raising that.

As for the operational and strategic implications for the United States, I think some of these are by now well known from reading some of the RAND reports and again, the OSD report. But we're talking about, you know, a growing threat to the security of some of our allies and security partners – especially those who are – the closer they are to China, you know, the larger the number of conventional ballistic missiles that would be able to be used against them. But we're also talking about greater vulnerability of U.S. military bases, close to China and increasingly further afield; of U.S. Navy surface ships; of our space systems and the compute networks that we rely on to support our military operations.

That is not to say that there aren't things we can do to, you know, counter all these threats and that we aren't, you know, doing those things. It's just to highlight that it's a much more challenging problem for the United States operationally than it would have been at, say, the time of the '95-'96 Taiwan Strait crisis.

Kind of to go up about, you know, one or two levels of abstraction here and think about some of the strategic challenges or broader challenges for U.S. policy, you know, one of them is how we kind of maintain our influence in the Asia Pacific, how we deter China from coercing its neighbors or threatening its neighbors in ways that we wouldn't like to see them doing, without unnecessarily fueling their concerns about, you know, what some people in China see as U.S. containment or efforts to keep China down. There's a balance there that we need to strike and that's a challenge.

Similarly, in dealing with our allies and security partners, I think a somewhat underappreciated tension here is between helping them build their capacity to do more on their own, assuring them that we have the capabilities and the resolve to stand behind them, but at the same time discouraging them from engaging in unnecessarily risky behavior that might draw us into a crisis or a conflict that could otherwise have been avoided. And that's a difficult problem in any alliance relationship. And I think it's going to be one that's especially challenging as we're moving forward with rebalancing to the Asia Pacific.

And finally, again, looking at some of the strategic challenges and kind of the nuclear space and cyber sense of the term "strategic" – going back to what Dr. Bunn said this morning about some of the messy strategic situations that we could get into in a conventional conflict – I think there are a lot of crisis-stability and escalation-

management risks that need to be addressed here, if you're looking at the possibility of a conflict with a power that has a pretty full range of nuclear, space and cyber capabilities. That's something that I know people are certainly thinking about right now – how to try to promote some mutual restraint and mitigate some of those risks, but it's something that I think requires a lot more – a lot more – a lot more thought going forward. And as we're talking about integrating nuclear, space and cyber into the next QDR, I think how we kind of address some of those crisis-stability and escalation-management problems should be front and center in those discussions.

And with that, I'll wrap it up and just thank Dr. Murdock, again, for inviting me.

MR. CLARK: Thank you.

Pete.

PETER W. SINGER: Well, I did this on PowerPoint, mainly because I saw some of the people in the room starting to go through withdrawal symptoms by not seeing PowerPoint. So we're going to get going here. And also, frankly, to give you something visual to look at. It's been a long day.

So addressing with the security environment in the future, there's all sorts of shifts that we could focus on, which many of my colleagues today have gone into. One, as we just heard, is the growth of Chinese economic and military power and what that means for the U.S. military. This is a picture from a Chinese magazine of their version of air-sea battle. Another is the proliferation of weapons of mass destruction. But I would argue with Dr. Hadley that what we're not worried about is WMD in the same way – and we think about deterrents in the same way – it's not the big bang theory of international politics, that is thousands of WMDs threatening us. It's rather the worry of little bangs – the ones and twos in the hands of regional adversaries.

Another key shift that's going on out there is global population patterns. A fundamental difference between when we started QDRs and today is that the world's population has moved from being majority rural to majority urban. And over the next 25 years, which is supposed to be the period that we're doing our planning for, we move to roughly 70 to maybe 80 percent of the world's population living in the city.

Now, if war is a human endeavor, what does it mean if the people are moving? That is, rather than its rural history – and our past QDRs focused on winning hearts and minds in the very same villages that Alexander the Great fought in that haven't really changed since then – what if the future of humanity, maybe the future of warfare, is in the cities? Another way of thinking of it is, what if our most likely deployments are not these rural regions, but rather – whether it's major combat operations, peacekeeping, CT, humanitarian disaster relief – these messy, tough places of today?

MR. CLARK: (Off mic.)

MR. SINGER: Sure.

But I know why I was invited here; I'm the technology guy. So I'm going to focus on technology. And not technology itself, but the trends of technology.

This is a picture of Moore's Law that a lot of you are familiar with. The idea that we've been able to pack more and more computing power into our microchips, in our computers, into the systems that utilize them, such that they basically double every 18 months or so, meaning between the time when we start the QDR and when it comes out, roughly we'll see a doubling in our technological power.

It's better illustrated by this: The Hallmark Greeting Card. If you've ever held one of these cards in your hand that opens up and plays a little song, you held more computing power than the entire U.S. Army had when my father served in it. Now, what that means moving forward, is if Moore's Law holds true over the next 25 years, the way it's held true over the last 40 years, our chips, our computers, the technology that's powered by them will be a billion times more powerful than today. I mean, a billion in the – (inaudible) – I mean, literally with a one and nine zeros behind it. Even if technology moves at a pace that's 1/1000th, lop off those last three – a mere million times – do we incorporate that into our strategic planning?

And what this means is that we have a series of game changers moving forward that the QDR needs to be mindful of. I wrote a book about one of these killer apps, about how we went over the span over the last QDRs from not using unmanned aerial systems, not having armed ones, to now having more than 8,000 in the U.S. military inventory. And we kept talking about it in these different things, how it's center to U.S. policy, and yet not really wrestled with in the QDRs. Still on the ground, zero to 12,000. But that's already here. What next?

I'm part of a project that OSD-ATL is supporting called Nex-Tech (sp). And what we're trying to figure out is what is the equivalent to where the computer was in 1980 or where the Predator drone was during the 2001 QDR? That is, technologies that are real – they're not science experiments; they're not science fiction – but they're game changers, but they haven't yet made their game change felt. This is a word cloud of interviews we did with over 60 scientists, military lab directors, venture capitalists – basically, the people who are going to make the future come true – these are what they think are some of the major game changers that are out there.

Again, robotics, the next generation of them – size, shape, form, fundamental shifts, arming them. But also their intelligence and their autonomy. This is a picture of the X47 UCAS that is a next generation unmanned aerial system that importantly, doesn't just fly faster, isn't just stealthy, but can do more on its own. Take off and land on its own, fly mission waypoints on its own, air-to-air refuel on its own, and potentially penetrate enemy air defenses on its own. But can it defeat its ultimate foe on its own – the F-35s budget hold? (Laughter.)

Artificial intelligence, like Watson here, won't just play jeopardy, but move into conflict. Iterative things – cyber warfare, where your combat terrain is literally changing and adjusting to you. That is where we go from utilizing the Internet to the world is wired around us. Nanotechnology, all the way down to the micro scale. Directed energy, lasers. It's been long talked about; it's now finally real. Everyone was bedazzled by Iron Dome a couple of months ago. That we could shoot down a rocket with a missile. Well, three months later, Iron Dome's out of date. I knocked F-35, so Lockheed should be happy for me to talk about ADAM – the Area Defense Anti-Munitions system. Basically, a laser that does work in shooting down incoming rockets and missiles. This is a picture of it in super slow-mo.

Material science – not just what we use, but how we make it: 3D printing. A couple of examples here: SOLSA. This is a plane that a couple of university students in the U.K. thought it'd be really neat to computer design, build and then fly. It took them seven days. Compare that design lifecycle to what we visualize now. Or the expeditionary lab right there, which is the Army is testing on in Afghanistan, where you don't bring your spare parts with you, but you print them onsite. What does that mean to our operations?

Neuroscience breakthroughs, human performance modification where you use technology to change the human – to replace what's been lost. Maybe advance past it. People go, wow, that sounds really sci-fi. Who would that really matter for us? Think about what night-vision technology meant for the U.S. military during the last invasion of Iraq, where because we owned the night, we were able to go into force that most war gaming found was roughly a third the size of if we didn't have night vision. Or think about what it would mean if you could perform at just a 10 percent thinking for the day longer.

Now, I show you all these, not because I think they're all going to have the same kind of impact, but to make a point: We are at a time of immense political, but also technologic, transition. In many ways we're in a period, I would argue, that's like around – surrounding World War I, where we had a series of science-fiction-like technologies that became real and then created disruptions in everything from the tactics and the doctrine to the decisions on whether to enter war or not. Except we need to recognize that our strategic parallel in this period is akin more to Great Britain's than to the United States at the turn of the last century. For those of you in the back, there's a picture of Great Britain's global entanglements and our current global entanglements. That is we have global responsibility, but a global burden. And we're tasked, the QDR, with how do we try to maintain dominance as the world shifts?

We also need to recognize another fundamental difference: This technologic competition is much wider now than it is back then. When it comes to military robotics, for example, there are 75 other countries that have military robotics programs. When it comes to cyber, there are over a hundred military cyber programs. About 20 of them are for ones, as opposed to, you know, Burundi's cyber program.

We also have a shift where the civilian side is highly capable, and I would argue, maybe moving faster than the traditional defense market. This is a picture of Charlene (sp). I advise a videogame called "Call of Duty." And there's an advanced quad copter that's armed with a 5.56 machinegun and explosives that's in the game. And we thought, for the commercial, wouldn't it be neat to build a working version of it that's controlled by a tablet computer? We built something – you can go online and see it – that is actually better than anything the U.S. military has right now. So we have a lot of big questions that the QDR should be wrestling with, given these trends. It should be posing these back to the system.

This is a picture of the Louisiana maneuvers from 1940 or the other is of the U.S. Saratoga on one of its fleet-problem exercises in the 1930s. First question we should be posing back to the system in the QDR is can we learn the experience of the inter-war period, where they truly had tough budget times, as opposed to all our whining today? They had a Great Depression, not a "Great Recession." And yet, during that period, they figured out everything from aircraft carrier operations, mechanization of the Army, Army Air Corps strategic bombing and Marine amphibious landing strategy.

Another fundamental question is how do you protect the new from being swallowed up by the old, especially in tough budget times? The old is privileged by current contracts, current program offices, current internal tribes and bureaucratic constituencies who see their careers as linked to these current programs, and current factories in current congressional districts with current lobbyists working for them. This is a list of the top 25 current programs of record. And it also shows how much remains to be spent on these current programs of record. Basically, there's a lot of old line in these current programs here.

And so while everyone gets whacked in tough budget times, what is new is often likelier to be whacked harder. So for example, we may be seeing a 25 percent reduction overall in Defense Department-UAS spending over the next year. I expect that unless the QDR changes this, '13 and '14 will see a further reduction, though we can't say how much. You'll notice what's interesting here is that the U.S. Air Force has the largest reduction in both total amount that they're planning to spend on UAS, but also the percentage. A 33 percent chop in something that the head of the U.S. Air Force said, quote, "Our Air Force has to be in the lead, because we know the best way to use them. Innovation is what we're all about." Thirty-three percent is greater than the chop that we're going to get out of any sequestration.

Another way of putting it is, how do you avoid placing all of your chips on the very best of the last generation? This is a picture of the Gladiator – the best last combat biplane, that was described by pilots who had to fly it in the early stage of World War II as a quote, "flying coffin;" or this is a picture of the USS Mississippi under construction in 1907 – the very last U.S. pre-dreadnought ship. It was actually outdated before it left the shipyard. Do we have similar systems like that today?

But again, it's a transition so you also have to spread your risk out there. How do you avoid putting all your bets on the first generation – not just the last generation, but the first generation of what's new? That is, when you gain the new, how do you avoid locking in your acquisitions, your tactics, your doctrine into what works at the start, but may not be the way it ends up? This is a picture of the HMS Furious. The British, comparable position to us, actually invested this crazy concept called an aircraft carrier, invested in it, didn't have to, but they do. But then they lock into a suboptimal design and use for aircraft carriers, whereas the U.S. Navy figures out fleet aircraft carriers. So they were the first, but they chose the worst.

Another question: How do you preserve competition in emerging domains? We've got a lot of defense – defense-industry people here. They'll probably not – they'll turn their head quietly when I say this, but we've basically lost competition in everything from jet fighters to ship building. We have monopolies or oligopolies at best. But we still have it in many emerging areas like UAS. So for example, the U.S. right now has over 50 companies competing in UAS with over 155 different designs out there right now. How will we maintain that, given our current acquisitions process? That is, how long will it take to go from 50 and 155 down to one or two and one or two? How do we avoid it?

Another issue that relates to this is not just how do we keep ahead of the civilian market, but how do we just keep pace with it? This is a picture of the joint tactical radio system, JTRS, conceived in 1997 – the very same year that Apple created the "I" Initiative. The "I" Initiative delivered everything from iMacs to iPods to five generations of iPhones. JTRS – I don't have to say what it delivered.

This is a picture of one of America's greatest horsemen. He actually represented us in the 1912 Olympics. Fortunately, a young George S. Patton was moved into tanks just five years later. I ask this, because it is another issue we don't talk about typically in QDRs, but how does your personnel system link to your strategic priorities? Are the processes and incentives working for or against your strategy? So we could have asked this in prior QDRs, such as the claim shift to getting better at counterinsurgency and the AFPAK Hands program, but we're also seeing this in a lot of these new, emergent areas.

So if, for example, RPA/UAS is the future, as the head of the Air Force said, is it good that only 43 out of 4,500 Air Force colonels have experience with UAS? And of those 43, only 15 of them were promoted below the zone? Or even lower down, is it good that an officer in this community is actually 15 percent less likely to become major if he's coming out of the RPA community, compared to all of his peers? How are going to shift our personnel policies to reflect our new strategy, our new acquisitions?

Now, let me be clear here: It's not that we're going to see all the old disappearing or anything like that. Akin to Admiral Greenery's writing on, quote, "platforms over payloads," we have another fundamental question that our QDR should be posing: How do you figure out which technology can and which technology cannot be used in powerful new ways? What's going to be useful to you in the long term and what are you

buying that has a short half life? Take what happened with the B-52 Bomber here. We have a system that was first created in 1952 that's still flying today – 60 years later; still useful. But my argument here is not longevity. It's the idea that we were able to revolutionize a technology originally designed to drop atomic bombs on Moscow, to fly faster and higher than Soviet jet interceptors and use it for close air support in Afghanistan. What are our B-52s or tomorrow? The joke is, they'll probably still be B-52s. (Laughter.)

But in all of this, how do you avoid getting carried away with the new, thinking that it will somehow solve all of your problems; that it will, quote, “lift the fog of war,” remember that? A problem that struck a prior QDR. Shifts are not about solutions. They're about new problems, new questions that we must accept that we don't have all the answers for. So you'll see again and again I kept talking about identifying risk, but also spreading your bets out on it.

So in ending, I would argue that the fundamental question for the QDR is how to avoid what this fellow is experiencing here: a Zen moment. That is, how does the QDR avoid focusing just on the present? You'll notice that I seemingly talked about the future, but I kept making historic parallels. And that's because in my sense, the only way for us to succeed is to keep our eyes on both horizons, to be aware of what's coming at us from the future horizon, such that you can – you can't fight the future, but as Martin Luther King once said, you can bend the arc of history in your direction, but also to be aware of the horizon behind us, to be aware of what played out in the past. To know, as Mark Twain once put it, quote, “History doesn't repeat itself, but it rhymes.”

Thank you.

MR. CLARK: Thank you.

I just want to ask a couple of quick question of particular panelists and then one question of all the panelists and I'll throw it open to them.

For our intelligence colleague here – and I say this having worked at the CIA for 10 years, not 10 minutes – it feels like 10 minutes now. What are the implications of the world that you describe for defense, because that's – I understand Steve Hadley wants us to go back to basics.

MR. BURROWS: Well, I think it isn't necessarily a more dangerous world, but the problem is it's very – it's a lot more difficult to figure out exactly what the pathway will be. I mean, the reason that we titled the latest Global Trends, Alternative Worlds is because there are a wide array of alternative worlds that can happen. So in many ways, you're having to protect against a whole bunch of risks and threats. And trying to understand, actually, the different combinations, different ways – as I was talking about – I was talking about discontinuous change. That small things actually may end up being big threats. I mean, that makes it a much more difficult environment. I would say not dangerous, but difficult environment.

And then I think the other thing that you have to think about – and I know this came up – I was involved in some of the red team meetings in the last QDR – is that we do have to think about whole of government; we have to think about public-private partnership when we're thinking about these threats or risks. And that has to be part of the exercise.

MR. CLARK: OK. I like, Peter, I mean, yours was a very good brief to end the panel with, because there were a lot of pictures. You were right about that. (Laughter.) They were lively, but I still don't get a sense, beyond protecting R&D and S&T, what would you have the 2013 QR really do? I think of Andy Marshall and that assessment office. Are you thinking about setting up some kind of independent study for incubating new ideas – perhaps with Peter Singer as its head? I don't know.

MR. SINGER: No. I'm – again, I think that's to sell it short. In many ways the question would be, what if you were to be doing a QDR back in the 1920s or '30s? What would you have gotten right, what would you have gotten wrong? And the answer wasn't just to set up the red team.

No, the issue that I'm talking about – and I think there's huge implications from this – take that, you know, top 25 program of record list that I showed you, not just what we're spending the most on now, but what we're planning to spend the most on in the future, and then compare that to the trends that we've identified and some of the common mistakes that have played out over the past. You know, are we investing massive amounts in systems that might not be all that we think they are?

Or take the trends on urbanization. We have spent 50 years investing greatly to achieve open-field dominance. And yet, we are seeing more likely that we're be operating in urban zones, which are the toughest to operate in, because of the multi-dimensionality and the multi-directionality of the threat that's there. That also kicks back to acquisitions. Are you investing in certain systems that may be great for a dirt, rural road in Afghanistan, but might be terrible if you're sending men to a urban environment. A lot of what we're doing in work in acquisitions on IEDs right now is a great example of that. There's a specific program to illustrate that it's wonderful. It picks up a metal piece from a hundred feet away. So instead of finding the IED by walking on top of it with your metal detector, you can pick it up from a hundred feet away. Amazing! You hand that to a young Marine going into a city and say, the way you're going to find an IED is by the piece of metal within 100 feet of you? They will literally throw that away.

Each one of these – I mean, I can go on and on. I don't think it's just – I don't think what I was putting out there was red team. I think what I was doing is pose actual, hard questions. Don't just let the QDR be an exercise in validating current budget priorities. Period.

MR. BURROWS: I think, you know, we don't face in that sense a peer competitor – at least not in this next 15, 20 years. I also agree with Mr. Hadley's remarks

that I don't think China is particularly interested in being the global hegemon. It's not clear it ever will be.

That said, I would say the question is not so much risk or threat inflator. I think what we're all struggling with is that there's a broader array of different kinds of threats. You know, there are threats that don't easily prioritize themselves. I mean, I totally agree that back in the 1950s we faced a much greater existential threat from the Soviets that you do not see today. But what is more difficult about the environment today is that you have such an array from cyber to potentially nuclear – not necessarily from, again, the great powers, but from regional powers, from individuals, small groups. So that's what you have to somehow find a way of guarding against. And you have to somehow find a way of trying to prioritize that. And that's – that's the very difficult part.

MR. CLARK: But the world that you're talking about is not a world, for example, which you'd be willing to accept a military, for example, say, 25 percent less.

MR. BURROWS: I wouldn't say that. No, because I think one of the roles – if you're looking to U.S. leadership – is that you will be the balancer in some regions. I mean, you can see this in the Middle East, you can see this now in Asia. And that is a source of U.S. power and leadership. But that shouldn't be the only way you demonstrate leadership. I mean, I think, my own personal mind, the U.S. remaining the magnet for the world's talent is probably the priority. That can maintain your technological edge, that's a source of your influence around the world. And over the long run, that's going to probably keep you at the – make you as much of an indispensable power as you can be in a multi-polar world.

MR. CLARK: Peter?

MR. SINGER: I would say that I'm going to modulate a little bit what Micah said. That there is indeed hype, but the threat of it to me is not so much it's completely hollow is that it steers you in the wrong directions. And so we have – and it leads you to focus on the wrong threats and maybe not take the proper action or response that you should. The last panel talked about this on the discourse around sequestration and the way, particularly a number of the lobbyists framed it. You know, it was going to, quote, “destroy the U.S. military” or those sorts of things.

And we, first, we actually started to see some worrisome regional developments where our allies were actually listening to our hype. The U.S. military wouldn't be able to carry out a single mission successfully. We had an engagement with the South Koreans where they were like, hold it, is this for real? And you know, of course it's not. It's we're just hyping it.

But secondly, it meant that we focused on the short-term sequestration rather than what was really at risk of hollowing out the U.S. military, which is, you know, our failure to reform on personnel issues and benefit issues for over a generation. That's more of a sort of greater threat if we keep doing business the same way.

The similar would be on cyber, which I think is a good illustration on Micah's point on maybe the interested parties. In 2001, there were four companies lobbying Congress on cyber issues. Currently, there are 1,489. You know, ding, ding, ding, dinner bell.

The problem is cyber's a real threat, but it gets framed, you know, so as the head of the Senate Armed Services Committee said, malware is, quote, "like a WMD." As the national security adviser said, able to, quote, "able to destroy our society." Meaning that it – this is in the words of the former chairman of the Joint Chiefs, it should be looked at as, quote, "an existential threat to the nation." I may be crazy, but I preserve existential threat for things like alien attack, not malware. (Laughter.)

So what I'm getting at is that we've focused on things like the risk of a quote, "digital Pearl Harbor," like the secretary of defense said, when the real cyber threat in a national security circumstance is death by a thousand cuts. And it goes to what Mike was talking about where we have an adversary that has literally vacuumed up intellectual property – including from our defense contractors – such that we've lost a 10 to 20 year both investment of R&D, but also maybe edge on a future battlefield. You know, they've leaped a generation by sucking up our innovation. And so – but we don't frame it that way, because it's not sexy in our field. It's better to talk about cyber 9/11, digital Pearl Harbor, et cetera.

MR. CHASE: I think I'll start by proposing that we only talk about Pearl Harbor-like attacks that they're actually attacks on Pearl Harbor from now on and not use the prefix of space or cyber to talk about those types of things.

But I guess if I could just pick up on some of the themes that the other panelists have addressed, I think it's – there's a danger of kind of threat inflation or exaggeration on the part of our potential adversaries or competitors as well when they look at what we're doing and the threats that they believe that we pose to their security. And I mean, I'll take, you know, the example that I know best, of course, is going to be China. And you can read a lot of literature there and talk to a lot of security specialists there who appear to generally believe that the United States is trying to contain China. I think that, you know, nothing could be further from the truth. I mean, even if we wanted to contain China or hold China down in some way, I don't think that would really be a plausible thing to do – absent some, you know, incredibly poor judgment and poor decisions on their part that made something like that possible.

They think that the problems that they're having in their regional security environment are, at least in large measure, because we're somehow causing Japan or the Philippines or other countries to challenge China's interests more openly, when in fact, I see a lot of that as reactions to more assertive behavior on China's part that made those countries feel very uncomfortable about some security interests that were important to them for, in some cases, really for domestic political reasons.

So I think there are some challenges there. And one of them is thinking about how, you know, China and potentially other countries view the U.S. as a challenge to their security and what they think they need to do about that. And I mean, you can – you can look at some kind of wildcard incidents like the embassy bombing in 1999 that I think had a big impact on the way that the Chinese – or that many people in China at least – think about the U.S. as a, you know, challenge to their security. But you know, even absent anything like that happening again, I think we have a pretty big problem in terms of, you know, kind of strategic interaction and, you know, mistrust and threat perceptions that are not that closely tied to reality. Not – and again, I'm not talking about on our side so much as I am on their side, but there's certainly a danger on, you know, kind of centering on how those threat perceptions might interact. And that's something that I think we need to be attentive to.

MR. CLARK: Micah?

MR. ZENKO: Yeah. I'd just say on the last point there, some U.S. people would also think that the rebalance is containing China. I've been out to Leavenworth three times; I'm going back out in March, talking to people who (cause ?) development. And it is the position of a lot of thinkers in the U.S. Army that the rebalance looks and feels a lot like containment, even though we don't use pivot anymore and we don't use – we certainly don't use the word containment.

I would just reiterate that, I mean, if you look at – the question that the United States should be asking is what grand strategy does it want to attempt to achieve? And which of those elements require a primarily a U.S. military response? I don't see the national security threats to the world that lots of people do in the conventional wisdom in Washington, D.C. I see a lot of challenges, which have to do with governance, sustainability, development, climate change, food scarcity, et cetera, none of which has a primarily military response to it.

This year, about 2 (million) to 3 million children under the age of five will die from vaccine-preventable deaths. The United States could save all of their lives for the cost of two months in Afghanistan. If you are interested in actually going out and saving people's lives, that might be where you want to put some of your chips. But those are the sorts of grand strategy issues that you won't see raised in this QDR or anyone that proceeds it.

So the question is not so much whether there are threats and risks to the United States, which of course there are, but primarily, they're challenges and they primarily don't require a U.S. first – U.S. military first response.

MR. CLARK: I'll take two or three questions. Are people – I guess the audience is more determined than I am to keep us on schedule.

Anyway, why don't you join me in thanking the audience – thanking the panel. (Applause.)

And we'll take a 10-minute break and then start again.

(END)