STATEMENT OF

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BEFORE THE SUBCOMMITTEE ON TERRORISM, UNCONVENTIONAL THREATS

AND CAPABILITIES

ARMED SERVICES COMMITTEE

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Chairman Saxton, Members of the Subcommittee,

I'm honored to have the opportunity to address the Subcommittee, and I am grateful for the opportunity to discuss a concept so vital to the nation's future – defense transformation.

Transformation is part of the new rule set for achieving and maintaining military advantage in an age of increasing complexity and accelerating change. Simply put, transformation is an imperative for the security environment of the information age and globalization. Today, when you buy a military, either you buy transformation or you buy irrelevance. Transformation broadens our options and allows us to create new opportunities while foreclosing those of potential adversaries.

We have been told how difficult transformation is. But, a funny thing happened on the way to transformation – it is happening much faster than what we expected when we announced the journey just 28 months ago. I recently traveled with Deputy Secretary Wolfowitz to the western training ranges at Ft. Irwin, Marine Corps Base 29 Palms and Nellis Air Force Base. Throughout this trip it was clear that transformation is happening. It is not just a concept and not just action in the future – transformation is happening today. It emanates from the top, but is also living and growing from the bottom up. There, in the field, I saw our "stodgy, hidebound" Army transforming before my eyes; they are hardly stodgy, they are hardly hidebound – they are vigorous and vital. It was a marvelous thing to watch as units appeared on what seemed to be a conventional battle space – only to be simultaneously immersed in conventional warfare, urban warfare, civil affairs, and a simulated local political problem. I spoke with a Company Commander who found the training so realistic he had flashbacks to his most recent experience in Iraq. Only one year ago, this capability did not exist. In just a matter of months, we see a wholesale change not in what leadership is saying, but in what soldiers can do.

Another thing we couldn't help but see is growing interoperability – jointness – down to the tactical level of war. Always a purview jealously guarded by the services, we see interoperability barriers coming down. This was clear in conversations with junior officers – they are saying things about transformation that I had always hoped for but didn't expect to hear this soon. This does not mean that we don't have a long way to go, because certainly we do. It is one thing to have the desire and to take the first steps, and it is quite another to turn it into a robust capability. However, absent these beginnings, transformation wouldn't happen.

These are examples of what we commonly refer to as transformation of the force. We also see transformation of the role of defense in national security and, indeed, in society. Homeland defense is no longer an abstraction to the average American citizen, nor is it conducted solely at long range. This has altered our view of strategic response. Responsive means *reactive* – that we have ceded initiative to an adversary and are prepared to act in the wake of an attack. The President's *National Security Strategy* recognizes that the consequences of a potential WMD attack against the U.S. mandate that we be *preventative*. This is a different approach reflecting a different role for defense in national security. If we are going to be preventative rather than just punitive, a change in intelligence is indicated. Clearly, we have to know more sooner. This calls for different organizations, different systems, and different ways of sharing intelligence. This is another transformational direction the Department is headed.

As you can see, since "transformation" is a journey, not an end point, there is no succinct way of describing a "transformed U.S. military." However, there is a strong and growing consensus about some important aspects of future forces. For example, no serious observers of, or participants in force planning argue against transforming the force. Nor do they believe we should delay efforts to do so. The debate focuses on the substance and rates of change. Similarly, there are some general, if not yet openly articulated, agreements about the kind of forces we should build. These address where we should deploy military forces, the utility of speed in deploying and using those forces, their general structure and how we should organize them, and the kind of technology they should possess. This thinking sets the parameters within which the actual character of future U.S. military forces is going to emerge. But, like the general consensus that transforming our military is a good thing to do, there is less agreement on the details of where we should go and how fast we ought to get there.

There are two ways of deciding what U.S. forces ought to be. One is inductive, an approach that looks for weaknesses, gaps, deficiencies, and problems, and determines how to correct them. This is the way Pentagon planners went about designing U.S. military forces for over half a century. Over time, however, our force planning process took on the patterns and predictability of the threat it sought to counter. In the 1950s, for example, the combined average design, development, engineering, and production time for aircraft and tanks was less than a decade. By the late 1970s it was approaching two decades. There were exceptions, but the increasing length of the

cycle pattern was pronounced, and all other dimensions of the U.S. military reflected the pattern.
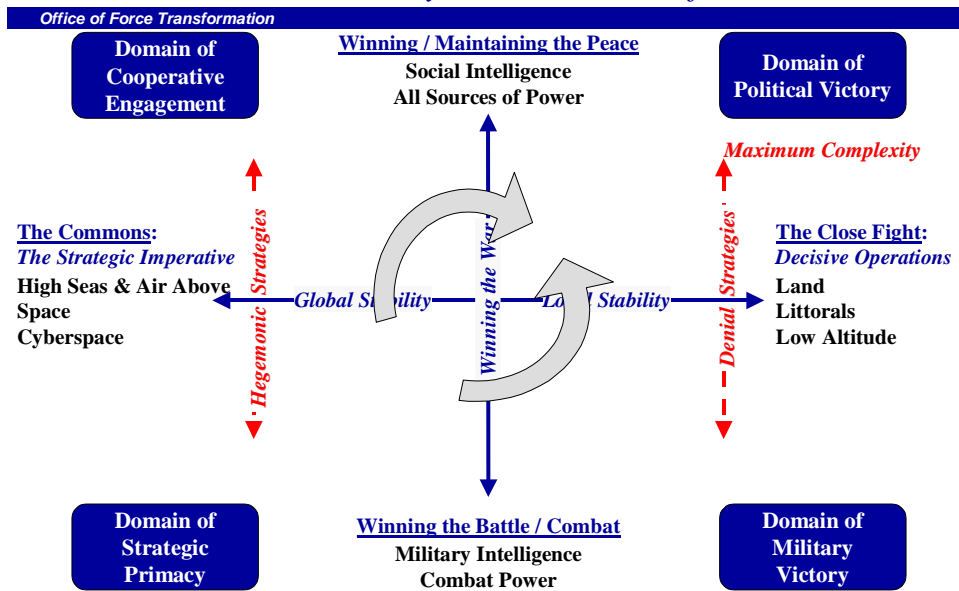
But, the most significant shift in our approach to planning is the rise of deductive thinking and capabilities-based planning. Capabilities-based planning is more than a new buzz term, pointing to a different way of managing planning risk. Capabilities-based planning addresses risk "horizontally." Capabilities-based planning consciously emphasizes a search for the unexpected, the deviations from the usual and the feasible, and assumes a future of increasing complexity and accelerating change. It starts with descriptions of global dynamics, in which the complexities of globalization figure prominently, and the role that United States must assume in that emerging world. We consider how a U.S. military should support that role and what balance of force capabilities would best fulfill that support. To some, this sounds very much like our approach to force structure, size, disposition, organization, and costs in the past. But, there are some important differences. Yes, we want the U.S. military to defend the United States and U.S. interests, but the context in which we expect it to do so is likely to be dominated by a broader, more dynamic range of challenges than those we faced in the past. As our appreciation of this grows, we are discovering that our forces must be rebalanced with the emerging realities, and we are starting to understand, in detail, the change necessary for our future.

As the pace of change in the information age is accelerating, so must the institutional transactions that create capabilities from "learning." Stagnation of institutional learning comes at the expense of creating future advantage. As we perfect the comfortable and familiar "known," new knowledge enters the force glacially, and we risk becoming a strategically fixed target. If we are to take advantage of what the new age offers, we must adopt a much faster acquisition and generational cycle rate in the military. The cost of sticking to slower generational turnover—a technology cycle time that currently runs 15 to 25 years for U.S. forces—is likely to be technological surprise that works to our distinct disadvantage in future conflicts.

Are costs prohibitive in achieving capabilities the future demands? That depends on how they are met. If the cost of transformation is simply added to the costs of maintaining the legacy systems, doctrines, and processes we have carried into this century, the transformation process will go slower. But, if we pay for the new by relinquishing the old—as we should and are likely to do—it will not only go faster, but will accelerate. I believe the United States has already slipped over the tipping point in the transformation process. However, the ride is going to get much more exciting, given the emerging realities of the security environment.

Global Security Balance
... Security = All Else + Defense

Domain of Cooperative Engagement

Winning / Maintaining the Peace
Social Intelligence
All Sources of Power

Domain of Political Victory

Maximum Complexity

The Commons:
The Strategic Imperative
High Seas & Air Above
Space
Cyberspace

Hegemonic Strategies

Global Stability

Winning the War

Local Stability

Denial Strategies

The Close Fight:
Decisive Operations
Land
Littorals
Low Altitude

Domain of Strategic Primacy

Winning the Battle / Combat
Military Intelligence
Combat Power

Domain of Military Victory

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One such reality is the retreat of our adversaries into complex terrain. Enemies under pressure always retreat to more complex terrain – from the high seas to land, from open land to cities and jungles, and ultimately to very complex social and political domains. This is why some fights go on interminably -- the transactions rates at the tactical level of war undergo a dramatic increase in number and complexity, and the metrics for success shift from being mass- and firepower-intensive to information- and intelligence-based. Thus, we see a change in our intelligence capabilities – the value of military intelligence is exceeded by that of social and cultural intelligence. We need the ability to look, understand, and operate deeply into the fault lines of societies where, increasingly, we find the frontiers of national security. Social and cultural intelligence allows us to do so. As a result, we acquire the ability to better identify and understand potential adversaries. This is an area where we will look for "big bets" -- high payoff technologies or concept/technology pairings that can not only alter our capabilities but alter the very character of military competition – in effect, creating a whole new game by rewriting the rules.

Another emerging reality is the potential political and military vulnerability of forward garrisoned forces. Consistent with the comprehensive global force posture review, we expect to see our forces increasingly favor operational maneuver from strategic distances and operational maneuver from the sea. Combined with the migration of conflict to complex and non-contiguous battlefields, this compels development in these essential areas – high volume, high speed lift and mobility assets to support both immediate and rapid power projection from strategic distances; a new model for sea power generation; new joint vertical lift; and, new concepts for logistical sustainment that tear down the stovepipes separating operations, intelligence and logistics. In other

words, we must change what we lift, how much we lift, how we lift it, and ultimately, why we lift it.

Logistics gets much attention because it is such a large fraction of any military undertaking. Logistics is very well understood because there has been so much study of it in the business world. All the business schools teach some version of logistics management. The focus is on optimization because it is so expensive. Optimization begets efficiency, which supports a better bottom line. However, one problem with current logistics models is just that – efficiency. The transparency afforded us by the information age creates predictability, optimization and efficiency. The increasing complexity and accelerating change of the security environment demands adaptivity, unpredictability, and dynamic fitness – measures of effectiveness vice efficiency. In other words, the front end of logistics is wholly incompatible with the front end of warfare – the objectives are different and the metrics are different. The magnitude of this dysfunction is becoming increasingly apparent, and transformational efforts such as "Sense and Respond" are first steps to move the Department in a new direction in logistics.

We are also likely to see a broadened approach to space. No one can compete with us in space – the way we do it. The fact of the matter is that our business model for space has been very, very good for us. We've done marvelous things and we've been enormously successful. But, over time the landscape changes. In this case, the technological context has changed making movement to an alternative business model possible and desirable. Cost per kilogram on orbit is a problem. However, *capability* per kilogram on orbit is soaring due to advances in information technology, and if we were to apply nanotechnology to space structures, the costs would likely plummet. It is time to reach for other business models. For example, the use of micro satellites makes possible alternative forms of lift into space. It also makes possible exploitation of the concept of the shared aperture or the sparse aperture where you accrue a larger capability as a consequence of networking many small things – and gain robustness in the process. These factors are not lost on potential competitors. Because we're moving into the age of the small, the fast, and the many, it is time to apply some of this thinking into our approach to space.

There are also opportunities in speed-of-light weapons -- directed-energy weapons of various kinds. Consider what happened when we put motorized vehicles on the battlefield and people no longer had to move on foot or horseback. What a profound difference that made. Then we introduced aircraft; we essentially made an order of magnitude jump from walking and riding to motorized vehicles – and made another order of magnitude jump from land vehicles to air vehicles. We increased that power further when we went to very high-speed air vehicles. Each one of these prior changes dramatically altered the character of the battle space. Today, very high-speed weapons may be traveling on the order of 5,000 feet per second (roughly mach 4.5) or even double that --10,000 feet per second. Now, consider for a moment 186,000 *miles* per second -- the speed of light -- and imagine the magnitude of change possible with speed-of-light weapons. We already have speed-of-light communications; with speed of

light weapons we are examining the conceptual marriage of a communication characteristic with a weapon characteristic. This can profoundly alter future battle space. We can pursue a leadership position in this area or we can respond to someone else's advantage after the fact. The choice is ours.

Biomedical capabilities constitute another area we must pursue. Throughout the 1930s and 40s, the number of battlefield deaths from infection decreased as a result of better hygiene and antibiotics. Before that time, infection was the dominant factor in battlefield deaths. With the advent of antiseptic practices and antibiotics, the dominant factor became death from the wounds themselves. With the advent of precision warfare, we took control of that portion of the physical battle space and the total number of deaths resulting from wounds dropped. Absent substantive effort to counter new biological pathogens created by adversaries chasing asymmetric advantage, we risk losing control of the future biological battle space—not just on military battlefields but in society at large. This should be a priority for homeland security -- it is a necessary "big bet" that addresses an emerging reality.

Many of these issues are examples of what we call "issues of regret." Failure to address these will yield regret for those who follow us. A list of such issues organized according to the elements of combat are shown below.

Candidates for Action Now

…Identify issues of regret

Office of Force Transformation

Warfare Elements
- *Fire* - **Non-lethals, Directed Energy, Redirected Energy**
- *Maneuver* - **Sea Basing, Vertical Battlefield, Lift for Operational Maneuver**
- *Protection* - **Urban Operations, Battlefield Medicine**
- *C2&C* – **Joint Interdependency vs. Interoperability**
- *ISR* - **Demand-Centered Intel, Tactically Responsive Space**
- *Logistics* - **Joint Demand-Centered Logistics**

Other indications of emerging realities reside in the service transformation roadmaps. If you were to examine these documents, as my office is tasked to do, you would see the services discounting -- the way Wall Street does -- making moves earlier in anticipation of an expected reality. You would also see subtle movements that consider the increasing international and civilian components of national security, and substitutions of capital for labor. Last year, the services highly prized independence -- this year they

favor interdependence. Last year, they spoke of achieving jointness at the operational level of war -- this year they talk about jointness at the tactical level of war. Last year, they said transformation is about our future -- this year they say transformation is about creating our future today. (See table below.) These are profound changes. Yet, they are only the beginning. Transformation is a continuing process, and while we must never be satisfied, we can be optimistic about what lies ahead.

Broad Conclusions
… Transforming the Force

Office of Force Transformation

Last year …	*New this year …*
• More expeditionary	• Lighter, more agile, easily deployable units
• More networked	• Knowledge-enabled warfare
• Designed to leverage the exterior positions	• Sustain on-call, global precision strike
• Leverage increasingly persistent ISR	• Persistent engagement
• Tighter sensor-shooter timelines	• Improved horizontal intel distribution
• Value information superiority	• Demand-centered intelligence
• Joint interoperability at the operational level	• Jointness to the tactical level
• Emphasized unmanned capabilities	• Substitution of capital for labor

OFT Transformation Goals

- Make force transformation an integral element of DoD corporate and national defense strategy.
- Change the force and its culture.
- Implement Network Centric Warfare.
- Get the decision rules and metrics right and cause them to be applied enterprise wide.
- Discover, create, or cause to be created new military capabilities to broaden the capabilities base and to mitigate risk.

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