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Good morning ladies and gentlemen, thank you for inviting me to participate in this outstanding conference today. Let me give you a frame of reference for my remarks. Trade, and the international environment in which it is conducted are what concern me and I will spend a little time addressing each. Trade is both affected by, and in turn affects global and regional stability. Trade is frequently sighted as a force for peace, particularly in the globalization debate. Trade also can be a source of conflict such as when extractive industries distort underdeveloped financial systems and prop up unsavory governments, leading to regional conflicts, insurrections, and sometimes difficult choices for western governments – a point I will return to later. It is instructive to remember as well that the cause of world war one, and its continuation in world war two are rooted in discontinuous evolutions in transport and information technology and the reaction of the landed class in Germany to the resulting competition in agricultural products that occurred in the mid 19th century. The point is that interactions of people, especially where they occur across state borders, in complex processes such as trade where there are always winners and losers both within and between states can lead to unexpected outcomes, sometimes including instability and conflict, and it will be the responsibility of many in this room to deal with that conflict. Consequently I think it is worth exploring areas where trade and instability intersect.

My overarching theme in terms of the future environment is complexity. The complexity I deal with is of a form most people outside my line of business do not think about, driven by interconnection usually not visible until they fail.

First let me say that in my view globalization is alive and well, although we are going through a particularly painful recalibration at the moment. Trade is off considerably from its highs of only a couple years ago. As many planning documents

recognize, disruptions occur without warning and effects get propagated far faster than ever before. The world is a complex place, and now operates in networks of networks no one really understands. Much of the current turmoil is related to linkages propagating risk no one really appreciated until it was too late. The resulting downturn occurred with breathtaking speed. Perhaps I am an optimist but I also believe that because of these same linkages and feedback loops the recovery will be far faster than most anticipate, and a failure to properly prepare for a rapid recovery is likely to be just as disruptive as a prolonged downturn. My remarks are thus oriented towards the more normal state of affairs that prevailed before the current downturn and which we will return to in a relatively short period of time.

There is by the way a great deal of opportunity in time of turmoil. There is much discussion in the military literature and various planning documents on asymmetric threats. What does not appear to be as well analyzed are what I call asymmetric opportunities, which can alter power relationships every bit as much as threats. Periods of turmoil from whatever source, including the current economic situation provide many such opportunities and we need to be mindful of when they exist and when others competing with us have exploited them. A good example is the Eastern Siberia Pacific Ocean or ESPO pipeline project in Russia, which was supposed to connect the developing eastern Siberian oil fields to the Pacific Ocean port of Nkodka. The Russians have a serious problem with exporting their oil in that they have no good means of doing so outside pipelines, and to have a real influence on global oil prices, tanker transport is needed and ESPO would have filled that need. As it happens the economic downturn hits and the Russians (Transneft) run out of money. Last year China recognizes the opportunity and agrees to fund pipeline construction along with the required capital to continue developing the oil field. The pipeline will not however go to the Pacific Ocean, but rather a refinery complex in northern China, essentially locking the production into China as a single destination. It must be remembered that in Siberian oil wells once they start producing they must be kept on line, Russia cannot turn them off and on like in Saudi Arabia. Therefore there is not even a credible threat that this oil will be subject to disruption the way gas supplies to central Europe are. China thus succeeded in getting a long-term steady source of oil secure from interdiction, which once on stream helps them

deal with what they call their “Malacca problem” or the ability of the US to interdict the flow of oil destined for China via the sea. This deal did not much attention here, certainly not as much as I thought it warranted, but when you stitch together enough asymmetric opportunities what you get is strategic surprise.

The current age of globalization, even excepting the temporary hiccup we encountering now, is driven by a disaggregation of the supply chain and an exploitation of economies of scale and comparative advantage at ever-smaller levels of the production process reaching across a wider swath of the globe. It is a hallmark of this age of globalization, the current economic travails will not reverse it, and in fact may eventually accelerate it, and it is critically dependent on the smooth functioning of the international system of trade facilitated by the ubiquitous container. The global intermodal transportation system is like that old FedEx commercial. An endless system of conveyor belts; packages are always in motion from where they enter the system to their final destination. Everything is always in motion, being shunted from one belt to the next. If there is any break anywhere then the whole system stops. The intermodal system is like that, containers always in motion. There is no distinction between domestic or international supply chains nor mode of transport, they are all linked and a stoppage anywhere is a stoppage everywhere. Instability in remote parts of the world gets transmitted to main street USA much more frequently and with much greater speed than ever before. I reject the notion that anyplace is “off the grid”. You are either on the grid because you participate in the international political economy or you are on the grid by virtue of the way you choose NOT to participate in the international political economy. Either way your presence will be felt and that can either be constructive or disruptive.

In addition, whether military planners want to admit it or not, US military operations are very much dependent on that global supply chain functioning properly. Not just to get military stuff from where it is to where it is needed, but more importantly to get it made to begin with. It is the nature of trade in component level material that the “made in” label is becoming increasingly meaningless. So the next time you sit at a weapons consol and look with comfort at the “made in USA” label affixed to it, remember that more than likely all that refers to is the label itself, for everything underneath it, all bets are off. It is getting increasingly difficult to write off far off

situations as someone else's problem and therefore my remarks will necessarily roam around a bit.

I'd like to start by examining threats to the global supply chain – with threats and supply chain being the operative words. First supply chain – we tend to talk about the global supply chain as if it were some monolithic thing. Policy also tends to treat it that way, but that is not the case. Containerized transport is certainly what most tend to think of, and perhaps rightly so as containerization is the underpinning for the current age of globalization. Containerized transport, or more precisely the combination of containerized transport and the information systems needed to manage the global trading system, have led to the disaggregated system of production that exists today where much trade is in component level intermediate goods rather than finished goods ready for retail. A point I will return to later is that the proper functioning of many aspects of the global supply chain for merchandise trade – physical stuff, is highly dependent on information, making the global supply chain vulnerable to attacks on information infrastructure. One key reminder of that was during the recent financial meltdown when trade was significantly disrupted due to the lock up in the letter of credit market, a financial instrument needed to manage counter party risk (this is not trade financing) and without which trade does not happen. While in the most recent case it was the general failure of the credit markets that drove it, a large-scale failure in the global information infrastructure will potentially have the same effect. Cyber warfare is taking on an increasingly important role in our military planning, and it is well to remember that cyber attacks that seriously degrade military performance can be directed at such things as infrastructure like power grids, financial systems, ports, and even railroad traffic managements systems. It might be worth pointing out at this point too that trade in services, which is also a significant component of the global supply chain, is universally dependent on the global information infrastructure. Services now account for about 19% of global trade, and that number is expected to rise as services are incorporated more completely into the WTO structure. Services, things like financial services and telecommunications, could in fact surpass merchandise as a percentage of total trade sometime in the next decade. Services are also of course a dominant US export, in which it is a world leader, so the security of the global supply chain in services should not be

overlooked. This sort of stuff is “transported” so to speak across a fiber optic backbone that is far more vulnerable to disruption than most realize. Much damage to very large networks can be done with little more than a scallop boat with a marginally sober skipper. Threats to international stability do always come from the business end of a gun.

Back to physical stuff - Production lines span the globe with each staged linked by a hyper efficient transportation system operating in a just enough just in time mode facilitated by a containerized intermodal network transportation system which co-evolves with each advance in organizational management of production processes. The structure of that system is a significant area of concern in terms of vulnerability however, something we will also return to later.

Another significant component of the global supply chain is the oil and chemical business. Oil waxes and wanes in terms of the general public’s focus, which tends to be laser like with gas at \$4.00 a gallon, but a little fuzzier when it is at \$2.00. Nonetheless, oil remains a critical resource and is likely to remain so for some period of time. The fact is that most of it comes from fairly unstable parts of the world, for the most part must get from where it is to where it is needed by water, and those water routes all tend to pass through a few choke points. I doubt there is anyone who does not know of the link between the Straits of Hormuz and the price of oil, even though most could not point to the Straits on a map. Oil is also the driver for the emerging friction in the arctic, where enormous amounts of oil and gas reside and ill defined state boundaries, the things the globalization literati said no longer matter, are taking center stage. As an indicator, our neighbors to the north in Canada, not normally associated with the mental image of global bully, have been rattling their sabers at the French, Russians, Danes, and to a lesser extent the US recently. For people that don’t pick fights very often, they don’t fool around when they do. All this over potential claims for oil. It also highlights that in complex systems actors behaving in what is to them a perfectly rational manner will appear to behave out of character to everyone else, sometimes another source of strategic surprise.

At this point I’ll put in a plug for UNCLOS, since the US, not having ratified it, lacks some standing in that debate. I’d also mention that as a future battle ground for

influence the arctic is an area where US policy and resources devoted to executing it do not match.

There are also many other components of the global supply chain that get scant attention. For example, it is often stated that 90% of the worlds trade moves by sea. That is only correct in one context. Excluding intra-European trade 90% of international merchandise trade – trade in physical stuff, not services, mentioned earlier – 90% of that by volume moves by water. Only 70% of such trade by value moves by water, meaning a large amount of high value trade moves by other means, principally air. As an example, an article in Foreign Affairs about 2 years ago or so ago pointed out that 80% of all drugs dispensed by US hospitals are flown in and the time between arrival and being dispensed is measured in hours. Therefore a significant disruption in the global air cargo system, a considerable component in the global supply chain, can quickly become a health care issue. This tends to put recent reports that the US air traffic control system computers have been compromised by hackers in a different light. The recent problems with heparin coming from China highlight first the global sourcing of high value critical materials such as medicine, and secondly the quality control issues point out another aspect of protecting the integrity of the global supply chain that could be the topic of a conference in its own right.

The politics of security is another area of concern. The US is dependent on imports at the 80% or greater level for 21 critical strategic minerals. Our largest supplier of Titanium at over 50% of US consumption is Kazakhstan which is consolidating squarely back into the Russian sphere of influence. The US is dependent at the 100% level for 17 critical strategic minerals, including graphite and rare earths such as lanthanide where our largest supplier is China, which is also our largest supplier for a total of 6 of those 17 critical strategic materials upon which we are totally dependent on imports. In terms of supply chain integrity I'm not sure if military planning includes alternate sources for those critical materials should the conflict with China that much military planning anticipates actually occur. But on a broader scale, the risks associated with imports of critical strategic materials, must be assessed in the context of the stability of the region from which we get them and contingency planning needs to consider either alternate sources of supply or quickly consolidating control over sources of supply in the

contested region. For that to happen effectively of course we need to know where all such vulnerabilities are, something I'm not sure we can ever really know. In business we had a similar situation that is an instructive example. One of the exercises firms that were in good financial health and capable of surviving the global credit crisis, including mine, had to go through as a result of the credit meltdown was identifying critical vendors spread across the planet in vast complex webs to understand the state of their financial health. In the short run, a company is only as healthy as its weakest critical vendor, and many of those otherwise healthy firms that were subject to risk propagating into their operation from critical vendors are suppliers to you, the US military, and you would not see a problem coming until it is a crisis.

Speaking of China, and it is not possible to talk about international trade without doing so, China passed Germany last year as the world's largest exporter – the US is third - and has surpassed Canada as the largest source of US imports¹ – probably no surprise. We should remember that China is also the single largest destination for our containerized exports moving by water – it is our biggest customer. It is good to remember that when talking about the global supply chain it does not mean just how what we buy gets here, but also how what we sell gets there, where ever “there “ is, and increasingly that is China, a point that fails to surface much in the protectionist debate. We also tend to miss the point I made a few minutes ago, the US remains the world's third largest exporter, and in terms of overall manufacturing, remains the world's largest manufacturer. In fact China is more aptly described as an assembler vice manufacturer, with estimates of value add in China of their exports at something on the order of 20%. China, while being a vast exporter, is also a vast importer of component level stuff. The US remains one of the world's largest exporters and accounts for near 10% of global exports. Since over half of what we import in containerized trade is likewise component level stuff destined for a US factory, plus the volume of stuff we export, disruptions to the global supply chain, or the US component of it, either from bad guys or self-inflicted wounds (another point I'll return to) will quickly be felt in the heartland in lost jobs. No debate about the security of the global supply chain and stability of the international

¹ According to TradeStats Express, US Dept of Commerce, 2008 Merchandise imports from China were \$337.8B, Canada 335.5B

trading system is complete without at least passing recognition of the schizophrenic relationship we have with China and the damage we can do to ourselves and the international system writ large by making mistakes there.

It is clear that the US is not self sufficient in anything and attempts to become so are doomed to failure. We must be engaged globally as our security and future prosperity lays in being interconnected in a vast worldwide market and the stability of that market, wherever it may be, is of interest to the US. The point of all this is that the global supply chain is a very large complex system where little is black and white. Policy focus tends to be on very narrow parts of it. I'm not sure if the true complexity of the global supply chain is understood at the policy level which in and of itself is a threat to the global supply chain in that policy is being made that effects the functioning of the system without appreciation for what those effects will actually be, some of which will not be good. This goes to the comment about self-inflicted wounds I made earlier. A great example was the Dubai Ports World debacle, blocked on the grounds of national security but not one single argument making that case could actually be made. We also failed to realize the extent to which the US military depended on (and still does) the cooperation of Dubai Ports world, who control ports such as Jebel Ali where significant volumes of cargo bound for Iraq are transshipped off line haul to feeder ships in the commercial transport system. If they wanted to hurt us they could do it far more effectively over there, which would require great cost to overcome than in a handful of second tier terminals in the US. Those complexities, and potential self-inflicted wounds, got missed completely in the emotional but unenlightened rhetoric over the event. The CNOOC acquisition of Unocal also blocked on national security grounds and again not one shred of evidence that national security was actually at risk is another example. Ironically that case eventually prompted instead the Chinese acquisition of a Kazak oil company headquartered in Canada which also had some Canadian tar sand holdings, again moving china forward in dealing with its Malacca problem plus expanding Chinese oil holdings in north America, while Unocal was in reality an Asian oil company that happened to have its headquarters in California with its production being mainly in the gulf of Thailand. The US remains at the top of the list as a destination of foreign direct

investment, a critical element in the global supply chain that benefits the US immensely. Bad policy, particularly when it is blatant protectionism wrapped in the flag as a national security issue can cause much damage and in my estimation the recovery time from damage due to bad policy will be much longer than the recovery time from bad guys disrupting the system.

My real topic of interest is threats, and specifically threats to the maritime trading system. The instant reaction is to head straight for the bad guys and focus on them. There are other threats of course, and a significant one I'll mention here is congestion. Congestion is significant first and foremost because it is the bad guys most effective force multiplier. Congestion – lack of sufficient capacity to adequately handle peak volumes or sufficient slack capacity to allow for flows to be rerouted in the event of a disruption in the system is a serious concern for supply chain integrity that never seems to make it into the debate. As the military moves to a global basing posture that is concentrated in the US and relying on the ability to move forces quickly to respond to contingencies, this should be a topic of interest for security purposes since the military will utilize that same infrastructure to facilitate deployments. Congestion ensures effects from actions taken by bad guys to disrupt the system get propagated much further in the physical system than they otherwise would, and also ensure that such effects cross from the physical system to the financial /economic system (price effects) much faster and more robustly than would otherwise be the case. Congestion properly exploited is the bad guys most potent weapon in that it vastly amplifies anything he does, increases the likelihood that he will be successful, ensures that even if he is not successful there will be a fear reaction in related markets such as financial markets which is one effect he really wants anyway, and ensures effects will be felt far beyond the immediate target area, drawing much desired publicity in the process. Examples in the US abound. The price of gasoline is very sensitive to refinery output in the US simply because we do not have enough of them, none having been constructed in over 20 years. Refineries routinely operating at over 90% capacity are a serious vulnerability in the energy supply chain. At this point I would note that there is little distinction between the global supply chain and the domestic one in trade in such fungible commodities as oil or oil products. Prices globally equilibrate quickly so a disruption at a refinery in Texas affects prices everywhere. Rail capacity in

the US is likewise operating near its limits when trade is at more normal levels, which I would expect to see within a few short years. Even small disruptions get felt quickly across multiple industries. If you asked a reasonably well informed Chinese businessman what concerns him the most I would not be surprised if he did not say it was the Navy hanging out in Guam, but instead the state of our railroad system, which has a large impact on the Chinese economy since it is how Chinese imports move off the coast to their final destination.

The US under invests in transportation infrastructure on the order of \$20B a year according to Congressional Budget Office study. That means that in order to just maintain the level of transportation capability we have now in the US we would need to invest \$20 billion a year more than we currently do. An alternative way to look at it is that every year \$20 B in damage is done to our transportation infrastructure that nothing is done about. It is ironic that we spend so much money defending against threats to the supply chain that have never actually happened while allowing that supply chain to be attacked every day in a less spectacular but far more damaging way with no action. That constant degradation only amplifies the congestion problem noted above meaning we make the bad guys more potentially effective every day. Maybe the money that is searching for shovel ready projects as part of the stimulus package will address some of that, but fundamentally infrastructure investment needs to be addressed in a long term systemic and sustainable fashion, something not compatible with the objectives of a stimulus program and we should not view stimulus money as an answer to that problem, nor should we consider the current slow down as something that will persist, we will recover and as I said in the beginning of my remarks, we will likely recover faster than many expect. Failure to properly plan for that recovery, meaning keeping sight of the poor state of our infrastructure which is currently being masked by the demand slowdown is essential to ensuring we are prepared for a long period of growth that is sure to come.

Narrowing the focus a little more, the structure of the global containerized transport system introduces vulnerabilities by its very nature. The international container transport system represents an extension of the production process. Goods are

inventory in transit, being scheduled into production runs long before they actually arrive at a factory. There is little tolerance for disruption. Further the global system is a complex adaptive system structured as a scale free network. Among the characteristics of a scale free network are first that it is robust to random failures but vulnerable to directed attacks, and second the presence of critical bridge nodes that connect clusters in the network. Disabling a bridge node disconnects clusters and causes the network to fail. Those bridge nodes are not necessarily in the US, but have potentially very large impacts on US trade hence economic well being. The global container shipping system, somewhat like the airline hub and spoke system, depends on integrated schedules and transshipment ports such as Singapore to function smoothly. Therefore disrupting ports that act as bridge nodes in the system can cause effects globally through local action. Disruptions cascade through the system such that a disruption in LA is felt almost immediately in places like Singapore, Hong Kong, and Yantien. Ports are not substitutes for each other, both from an equipment and physical characteristics stand point and also from a capacity stand point, which means disrupting a bridge node, even for a short period of time, will likely have large effects. Los Angeles, the port through which over 40% of all marine containers enter the US, is one of two post panamax container ports on the West Coast. Tacoma being the other. In the event of a problem at LA you cannot simply reroute post panamax ships to other ports as they are not fitted to accept them. Considering that at any given time there are hundreds of ships with hundreds of thousands of containers loaded on them in a way that discharge is by port rotation all with LA in the rotation, this can be a big problem. If LA closes ships will continue to arrive hourly and need someplace to go. There also must be sufficient spare inland transport capacity to clear any diverted containers out of the port on to their destination. As we noted earlier, spare rail capacity is nothing to take for granted, so even if a few post panamax ships did divert to Tacoma, there might not be capacity to move the goods inland. As a point of note, there are two post panamax terminals on the west coast, and only one on the east coast of the US. There are no superpost panamax terminals in the US at all. Understanding the global system as a system, interdependencies, and network interaction effects is critical to proper policy. The Chinese for example, are acutely aware of how important Los Angeles is to their economy. It is unlikely there is any

appreciation in the US for how valuable Hong Kong is to the US economy. Hong Kong by the way dwarfs LA in terms of container flow. We are piker's here as far as the size of container terminals go.

A lack of understanding of international supply chains are also critical factors in policy in that the costs and benefits of protective measures can not be assessed since the costs of protection need to be measured in not just dollars spent but also in the cost of disruption due to protection. It would be unfortunate if it turned out that the costs of a protection regime turned out to be more costly than any attack could be, a situation I think we are getting close to realizing. There are numerous examples of where we are walking on the edge in that regard. An interesting example is a GAO report on C-TPAT. In the opening section of the report the authors note "in 2002 Booz Allen Hamilton sponsored a simulated scenario in which the detonation of weapons smuggled in cargo containers shut down all US seaports for 12 days. The results of the simulation estimated that the seaport closures could result in the loss of \$58 B.." to the US economy. The pertinent point here is that contrary to how GAO phrased it, in the exercise the attacks did not close the US seaports. In fact in the war game there were two dirty bombs, neither of which even detonated. A rail car of wine is what exploded, and it was not related to the actual attempted terrorist incidents. It was just part of the background industrial noise. The seaports were closed as a result of the decisions of government participants in the game making the sorts of decisions they would make in real life. Decision makers closed the ports in a 9/11-type response to a couple attempted but unsuccessful attacks. Therefore it is inaccurate to say the bad guys did \$58 B in damage to the US economy. US response to a far smaller failed attack is what did the damage. The \$58 Billion, by the way, is a number that I feel is grossly understated due to what the study did not include. This also causes us to consider what it means to succeed or fail in this area. The bombs did not detonate which in one regard means the bad guys failed. But they also provoked us into doing \$58 Billion in damage to ourselves, including disruption to ports and supply chains upon which military activity in Iraq and Afghanistan depends, with no increase in security. So did they really fail and did we really succeed? Not as clear as we would hope.

In thinking about how to disable a port we tend to go to the large big bang attacks such as that noted above. In some areas it is much easier. First and foremost we return to the idea of IT. Modern automated ports are an intricate ballet of big machines and 20-ton boxes, all choreographed by computers. If the computers stop working, or data integrity becomes suspect, the terminals stop working. It really only takes a couple talented hackers and access to the Internet to disable a container terminal, no need to get anywhere near it. Speaking of data integrity, suppose the databases that contain all the information shippers supply under programs such as C-TPAT or CSI, and soon the 10+2 are compromised, meaning there is little trust that the information in them is trustworthy. What happens then in terms of inbound container security? Do we stop trade? There are many examples of these sorts of single points of failure across the global supply chain infrastructure and specifically in the US. Power transmission grids, railroad systems, pipelines, and fiber optic backbones all have this issue. Remember I said that the global supply chain is totally dependent on information, which means I can cause significant havoc in the global supply chain by attacking shore transition points for fiber optic cable where the US plugs into the global information grid. Those points are few and locations well known. Another example is the small number of points where the maze of subsea pipelines that brings oil in from the Gulf of Mexico production rigs comes ashore along the US gulf coast. They tend to converge into a few dense landfalls and the locations of them are well documented in highly detailed charts you can download from the MMS off the Internet for free. In fact publicizing those locations is important to minimize damage from anchoring ships and fishing vessels. Any disruption in the flow of crude out of the Gulf of Mexico will be transmitted in prices instantly around the world via the global trading system for oil, so if I want to affect the price of oil in Australia I can do it in Louisiana. We live and operate in a world that is far more complex and interconnected than most realize.

Let me transition now from trade and its enabling supply chain to the environment in which it operates. A significant amount of ink in various US strategy documents, from the National security Strategy on down, including the JOE and related capstone, talk about global instability that is not outright conflict. I pay attention to the

issue of instability because it is likely to be long term and much more impactful over the long term than an intense but clearly delineated conflict with a conclusive outcome. Instability can be from such things as pandemics and failed states, both of which have received much press attention lately. In fact if there is anything good that can be said about swine flu it is that it displaced Maersk from the front page of your newspaper and for that I am grateful to pigs everywhere. But it is weak or failed states I'll focus on here. The earlier part of my remarks discussed on how interconnected we are to the global economy and the nature of that global economy as a system. Threats emanating from failed states impact us primarily through the cascading effects of failed states impacting their local neighborhoods which in turn impact the overall system. As I mentioned at the start, no-one is truly off the grid and nowhere is this more painfully evident than Somalia. There are a couple interesting aspects to the Somalia situation that unfortunately have not made the news, but should have. First piracy has been an issue in the Horn of Africa for some time and the fundamental facts and drivers for piracy in the HOA region have not changed, only the US perception of it. That is always a little dangerous when reality does not change, but American interpretation of it does, as unpredictable things tend to happen as a result. Piracy, by the way, is still alive and well in many parts of the world, it's just that the HOA region is where piracy and western interests intersect in a major way. Piracy in the Sulu Sea for example is quite common, and also much more violent where the ship and cargo are the target and crews just routinely killed. As it happens, there's not a lot of international trade there however. Piracy in the HOA region is 100% the result of the failed state that is Somalia. There are no other economic opportunities, these guys are not simply going to do something else if it gets sporting for them in the piracy game, and it's all they have so they will continue to do what they have demonstrated a great capability for, which is to adapt. They will be around regardless of what we do at sea. Piracy is the predictable result of the international community refusing to deal with lack of governance in Somalia. The international shipping community got put in a difficult position early on in that the pirates will keep coming as long as Somalia is not dealt with. A sort of business model that worked for the pirates and, while not good for the shipping world, was the best that could be hoped for given the lack of attention to affairs ashore by the governments of the world evolved as a result. That model was that

no one gets hurt, nothing gets damaged, pirates get a ransom, and the ship and crew get returned. That model has recently been subject to extensive criticism, but in the end, given the circumstances; it is the model the industry got pushed in to. Alabama changed all that, not just for the US, but also for the international community (back to the perception changing issue). There are two possible outcomes that could have resulted from the Alabama, a serious discussion on how to deal with the root cause, which is Somalia, or an unhelpful myopic discussion focused on whether or not we should arm merchant ships in some form or fashion. The latter, which is what happened, is of course unhelpful because it allows the pretense of action without actually dealing with the issue of Somalia. Regardless of the outcome of the guns on ships debate, piracy will not get solved unless Somalia is solved.

The other interesting debate that should be happening that is not is what the real US national interest is here. Many of course will say that the US National interest is the principal of freedom of navigation, a sentiment I agree with wholeheartedly. It is interesting to note that the minimum required standoff distance for ships in international trade, including US flag ships, is 650 miles off the coast of Somalia. The area of ocean we are not supposed to traverse, meaning we have ceded control of it to the Somali's is over one million square miles. I have difficulty reconciling the concept of freedom of navigation with the fact that we have surrendered our right to transit an area of ocean larger than the Mediterranean Sea to Somalia. This cannot be acceptable as a long-term state of affairs. The Capstone document specifically notes that resolving many challenges ultimately will require establishing or restoring the legitimacy of indigenous governments. This is not the job of the US alone, it is the responsibility of the international community and Somalia is one case where it needs urgent consideration.

On a larger scale, the lack of will to deal with Somalia, with the inevitable result of the piracy problem, is one example of the lack of international consensus on how to effectively deal with Africa in general. Vast sums of money, resources and effort (including much self serving policy unfortunately) have yet to produce any significant headway. We cannot expect that we can leave the entire continent of Africa to fester without any spill over into the international system, it is simply unrealistic. States in Africa are all on the grid and they can either make their presence known constructively or

they can do it disruptively, like Somalia. Either way their presence will be felt. Nigeria is another example. Right now, with oil back in the mid 50 dollar a barrel range Nigeria has fallen off the radarscope, but it is still there, it still represents a significant source of oil, and it is still dangerously unstable. Unlike Somalia, where piracy is a purely economic crime, there is a large dose of ideology mixed in with what is billed as piracy in Nigeria, so they are not remotely the same phenomena. The capstone mentions part of stability ops being to help a nation defeat a growing insurgency, such as is the case in Nigeria. The problem is, as is the case in Nigeria, where MEND is seen as more legitimate than the government in some quarters, getting involved means picking a side in a civil war. But we often lose sight of the fact that by deliberately not getting involved we do the same thing. Either way we are faced with the problem of order versus justice, the mutually exclusive outcomes philosophers have been struggling with for hundreds of years, but has been absent too often in international political discourse.

The lack of international will to deal effectively with Africa, resulting in regional perturbations with international system wide effects, Somalia and Nigeria being but 2 examples, tells me that we should expect more of the same for a long time to come, not only in various hot spots in Africa, but in areas around the world. Mexico might be the next, with significantly more serious repercussions for the US than Africa. Mexico is rapidly heading down the failed state path, having lost control of not insignificant chunks of real estate to narco traffickers. The collapse in oil prices, while good news for US auto drivers, is not so good news for states like Mexico that depend on oil as a source of revenue and compounds their problems. State failure in Mexico, aside from the chaos that is already seeping across the boarder, has the potential to severely disrupt supply chains that span that boarder. While container cargo is normally associated with ships, only about half the total containerized goods entering this country comes via ship, the rest come across the boarders with Mexico and Canada. Much of that trade is in intermediate goods, where the same item may cross the boarder multiple times in varying stages of production. A disruption in those supply chains represent a potential for considerable disruption in manufacturing in the US, not just an interruption in a flow of finished goods. I can certainly foresee attempts at using national security as a basis for imposing onerous boarder controls for goods flowing to and from Mexico as a result of the growing

instability there. In effect a protectionist inspired attack on NAFTA launched under the guise of national security, which by the way would probably only serve to make the situation in Mexico worse.

Looking even further down stream and in keeping with a train of thought that we don't pay enough attention to Latin America, the push to go green and get off oil as a primary source of energy is leading to much interest in alternative energy sources for cars, in itself a good thing since transportation is where over 60% of our oil goes. If you want to solve the oil problem you have to deal with the issue of cars, and we are actually talking about solving a problem by altering our own behavior rather than changing the world to match what we want, which is a very good thing. Electric cars, either plug in or some form of hybrid are gaining popularity in that vein. Lithium batteries seem to be the technology of choice for energy storage. Here's where the problem starts. Roughly 75% of the world's lithium reserves are in Latin America, and upwards of 40% in Bolivia alone. The scenario developing is then a critical industry (transport) being totally dependent on a natural resource that is highly concentrated in one geographic area consisting of states with a marginal grasp on effective governance and not particularly friendly towards the US. Enter extractive industries cutting deals with local strongmen for access to that critical natural resource, pumping vast sums of money into underdeveloped financial systems ill equipped to handle it, especially from a transparency view point and its Déjà vu all over again, except this time it is our own back yard with direct, unimpeded pipelines into the US for illegal immigrants and drugs that can be quickly co-opted for the movement of anything bad guys want to move. While we seem to feel we can let rotting states fester in Africa even though it is at great expense in terms instability such as Somalia and the far greater opportunity cost of wasted human and natural resources, there are areas in the world, that we will not have that luxury.

The capstone document recognizes this of course, stating explicitly that the foreseeable future promises to be one of persistent conflicts much of which will not lend themselves to military victory, but instead at best result in a long term management of a chronic problem. The challenge there is that each actor with a stake in the problem will choose a strategy that seeks to manage the problem in a way that optimizes individual

specific outcomes, or at least minimizes costs over the long run. It is unlikely that such strategies will always be in synch. Political, economic/commercial, and military strategies to manage a chronic international issue are likely to conflict, and we need a way to deconflict them when they do without causing more damage to the international system than the initial problem did.

In the end, I am an optimist, I believe we can overcome the challenges that confront us but that requires a political will to match the military capabilities outlined in the JOE and related capstone. Absent that political will to solve the hard problems Somalia will just be a minor irritant compared to what is likely to come.