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Future Threats and Challenges
Patrick M. Hughes

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Future Threats and Challenges

Patrick M. Hughes

Lieutenant General Patrick M. Hughes is the twelfth director of the Defense Intelligence Agency (DIA), a combat support agency with military and civilian personnel stationed worldwide. The senior uniformed intelligence officer in the Department of Defense, LTG Hughes is also the director of the General Defense Intelligence Program, managing selected intelligence resources for all services as part of the National Foreign Intelligence Program. He was most recently assigned as the director for intelligence (J-2), the Joint Staff, DIA, Washington, D.C. LTG Hughes enlisted in the Army in 1962, and transferred to military intelligence (MI) in 1970. During his career, he served two tours in the Republic of Vietnam, and has commanded several MI detachments, an MI battalion, an MI brigade, and the Army Intelligence Agency. He also served in senior staff positions, including a tour as the J-2 of the U.S. Central Command. LTG Hughes holds a B.S. degree in commerce from Montana State University and an M.A. in business management from Central Michigan University; he is also a graduate of the Military Intelligence Officer Advanced Course and of the U.S. Army Command and Staff College, and is a senior service college fellow at the Army's School of Advanced Military Studies. His major awards and decorations include the Defense Distinguished Service Medal with oak leaf cluster, the Silver Star, the Legion of Merit with two oak leaf clusters, and the Bronze Star with V device and four oak leaf clusters.

Oettinger: You have had occasion to see General Hughes's biography, so I won't repeat those details. I just want to express my great pleasure at seeing him here, as I've had occasion to collaborate with him on his home turf. It's always been a pleasure and I am very much delighted that he's taken the trouble to come up and join us here today. So saying, I turn it over to you. I trust that you are amenable to questions, to interruptions, and discussion, as you were somewhat over lunch. But you've got a presentation, and so we'll let you go ahead with that until there are questions.

Hughes: Sure, thanks. I think this presentation falls into the category of a person who barely made it out of the eighth grade and requires visual aids in order to talk. I hope you can accept that as an ongoing premise.

Actually, Professor Oettinger is naturally understating his role with us. I think you all know that he chairs our Board of Visitors for the Joint Military Intelligence College and is a great friend and mentor for us at the Defense Intelligence Agency (DIA) and other parts of the government. I can't thank him enough,

frankly, and that's why I'm here, not because of any other reason.

I'll tell you a little bit about my associate here, and then myself. Captain John Vogler is my military assistant. He's been on the job about two and a half or three weeks, replacing an officer who held the job for a long while and was then off to Korea. It's a very good job for a young officer. He's a well-educated fellow: a Russian speaker, among other things, and an intelligence officer in the Air Force.

Now I'll just tell you a couple of things about me that weren't on the biographic sketch, or you might have had to work on it a bit in order to figure out. I originally joined the Army on 2 January 1962. I don't know what you guys were doing that year, but when I think it over, I have been in the Army pretty much ever since, and have been an intelligence officer since 1970, having served in my first intelligence assignment when I was in Vietnam. That kind of tells you where I come from. I've been doing this for a long time, and I'm going to retire in July, which, by the way, is a happy occasion in my view. I'm going to do something else.

I would like to explain just a little bit, briefly, about DIA (figure 1). This many-pointed star here shows the different kinds of intelligence: human intelligence (HUMINT); signals intelligence (SIGINT)—listening to people talk; counterintelligence—working against the other side and protecting what you have; imagery intelligence (IMINT)—taking photographs from satellites and airplanes and other activities; and measurement and signatures intelligence (MASINT), which is somewhat esoteric. This means the thermal signature, the chemical signature, the magnetic signature, the acoustic signature, the movement signature, that sort of thing. Technical intelligence is the exploitation of materiel, documentation, et cetera. Open source intelligence (OSINT) means the public media, academia, research and development outside the government. Collection management is the management of collection resources to maximize the focus of those resources against your particular targets. This structure shows what I do, and I manage it from the center of that star.

By the way, the precise size of my agency is secret, but in broad, general terms, I operate an agency of about 7,000 people and have oversight over around 17,000 people, with a budget of something over \$2 billion of American taxpayers' money.

My job is to integrate all of this and produce all-source fused intelligence for the U.S. Department of Defense. I have two counterpart organizations that do similar kinds of things. The Central Intelligence Agency (CIA) focuses on economic and political dimensions; however, they do a good deal of work in the military dimension, too. The Department of State's Bureau of Intelligence and Research (INR) also produces all-source intelligence, although they're rather narrowly focused on policy issues and implications of policy. So, I'm the military guy and my counterparts and colleagues at CIA and INR have their political, economic, and policy focus.

Student: Can you comment at all whether there is any relationship, formal or informal, with the National Security Agency (NSA)?

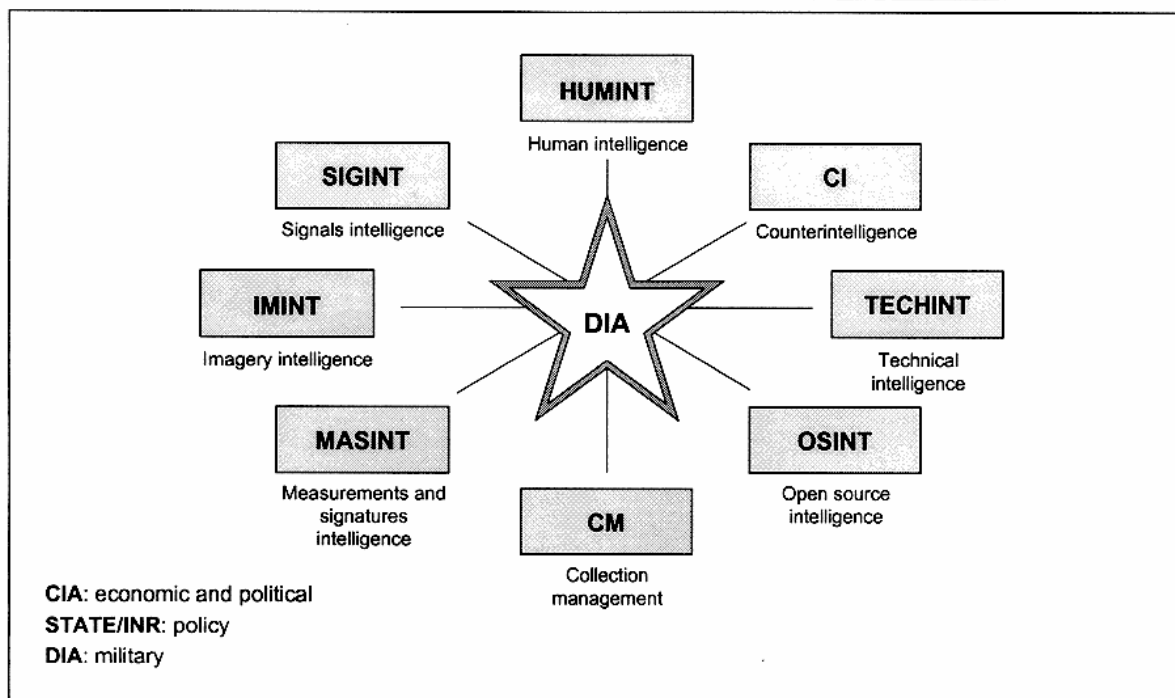


Figure 1
DIA Responsibilities

Hughes: Sure. NSA, generally speaking, is a collector of information in the signals intelligence realm. There's also an organization called NIMA, National Imagery and Mapping Agency. They work on IMINT. NSA works on SIGINT. CIA and DIA do human intelligence work. We all have our own counterintelligence effort because it's protective in nature. The CIA and DIA do offensive kinds of counterintelligence. Technical intelligence is pretty much CIA and DIA; some NSA, perhaps. Everybody does OSINT, and I operate the MASINT structure for U.S. government. Everybody does collection management, although DIA manages the DOD assets. So the figure kind of puts it in the right context.

I'm going to give you an intelligence presentation because, fundamentally, what you see before you is an intelligence analyst. That's what I do. People actually pay me money to do that, which I find amazing. I'm going to give you my best guess, and my views. I should tell you that this is part of a larger briefing that is classified, but I can't give you all of that for obvious reasons. I'm going to give you some fundamental thoughts that are unclassified.

First, a little disclaimer. There will be several intelligence disclaimers and several bad jokes during this presentation; it's just the nature of intelligence work. Here's the first one: As we speak, something is happening somewhere to change our viewpoint, and it's a very dynamic circumstance.

Oettinger: May I make a comment, going back to the discussion over lunch of a civilian example? There are many, many civilian organizations that do visions and don't seem to be aware of this. It's a serious issue, because if you make your investments march to the wrong issues, you've got a problem. So there are some important remarks on that slide.

Hughes: One of my favorite quotations is: "Forecasting is difficult, especially when you want to forecast the future," and I am afraid to get up every morning and try to foretell the future. I usually use chicken bones. I throw them up in the air, watch them come down, and then I read them. Occasionally I use Tarot cards, and I have been known to visit a

swami or two, but, fundamentally, I try to envision what is most likely to happen, and then I communicate that to others. I'm able to envision it based upon a broad array of knowledge. That's what we do. It is risky.

The famed Prussian theoretician and field marshal Carl von Clausewitz said, "The conduct of war is a dynamic, a natural conflict between reality and theory." His idea is very important for me, and I hope it's important to you. That is: we're dealing with something that we try to model, to fix in time, to sort of capture, and it's not capturable. It's not possible. It's extremely dynamic. It defies a model. It defies a template. Indeed, it is almost like greased lightning. What I'm trying to get everybody to recognize is that there is a natural conflict here between reality and trying to present the circumstances of warfare, especially in a realistic form.

I need to tell you about our philosophy here for this presentation, too, because it's the natural inclination of an audience like this to want to ask me about many specific issues, and I don't have time (and neither do you) to discuss all the specific issues. I am going to try to stick to kind of a mainstream of thought here. I'm going to talk about what are inherently very dynamic, nonlinear circumstances in that mainstream of thought as if they were linear and not very dynamic, because in order to talk about them that's the way I have to approach it. It's our best estimate. It would not offend me if you said it was all wrong. I approach each day as if I were wrong and I seek to prove that I am right.

We had to make a few important assumptions. By the way, they come out of the National Security Strategy, the National Military Strategy, and the Joint Strategy Review. Let me focus on two of them. The first one is that the United States is going to remain a global power. I think that's an easy, safe, fair assumption. Nothing about our policy, our direction, or our capability tells me otherwise. The second one is a little different. We're going to remain engaged around the world. I think that's a safe assumption, because, frankly, it kind of devolves back to the first assumption. If we're *the* global power, or *a* global power—one of the global powers—then we're going to have to remain engaged around the globe in order to continue to be a power. It's kind of a circular thought.

Ten years ago, we had 700,000 people deployed overseas. Today we have 240,000. Ten years from now, we're likely to have far fewer. Circumstances are radically changing as to what "engaged" means. In part, that's of course the effect of reduced budgets and the reduced threat of the former Soviet Union, which is no longer a presence as we knew it. Therefore, we don't require such a large deployed force. It's also the effect of technology and capability. We can now project force from the CONUS base or from very localized regional bases out into the large global condition very rapidly. We can actually do it with great capability. So, if the United States, as an example, wishes to rescue 10 people from a West African country under a noncombatant evacuation scenario, and has no forces within hundreds of miles of that region, we can rapidly generate forces adequate to the task. It's a short-term mission: we go in, take our people away, and leave. We do it all the time. We have done it. I offer history as proof.

I think that's the wave of the future. We're going to remain engaged, but our engagement is much different than it used to be, and it's going to continue to change. I personally believe that our actual presence overseas is going to decrease further, probably not to zero, but to something less than it is today. However, the projection of force is going to grow more strongly.

The Secretary of Defense's 1999 report listed the following as U.S. vital national security interests: protecting the sovereignty, territory, and population of the United States; preventing the emergence of hostile regional coalitions; ensuring access to markets; deterring aggression; and ensuring freedom of the seas and the air. Frankly, they've been articulated for several years. A few words have changed, but otherwise they are the same, and most of them are, as we say in the United States, "motherhood and apple pie." You can't really argue against them.

However, we have not successfully prevented the emergence of hostile regional coalitions or hegemonies. We may have deterred them or prevented them from achieving some hegemony, or in some way interposed ourselves in their progress and therefore caused some delay or some different direction, but we haven't prevented them from arising.

Thus, you now see a substantial number of states that were formerly associated with, allied with, or even friendly with the United States. The easiest ones to mention are Iran and Iraq, but there are a number of others that now are not simply not sharing the same goals as the United States, but are actually in opposition to our goals in some cases.

All of these are arguably vital security interests we ought to use our forces for, but that one is really hard, really difficult. They actually refer back to the conversation we had at lunch about the policy decision to use military force in an interdictive or preemptive fashion. Generally our policy has been not to do that.

This chart takes a little while to grasp (figure 2). The point is easy to understand, but it's a little convoluted, so I'll walk you through it. It starts on the left with military assistance, and goes across a range of potential contingencies from the least complex, and probably the most common, use of military activity to the most difficult, the most complex, and the least common. There's a zigzag dividing line between regional conventional war and local conventional war. It's our view, or my view (I'll take responsibility for this thought) that everything to the right of that line is unlikely to happen. If it does happen, it's so radically different that it would change the conditions fundamentally. We'd pretty much have to rethink or reassociate ourselves with the new conditions. Everything to the left of this line has unfortunately become common, and in fact it's not merely likely to happen, but is actually happening. In my view, it's probably correct to believe that it will be happening as a constant condition from now on. There will always be a local conventional war somewhere.

Now, how do you define the difference between the two? I don't know. I have no idea how to define what's a local versus a regional conventional war. I could give you some measures of merit. More than one border makes it regional; one border makes it local. Limited duration, limited intensity, limited scope versus larger scope, greater intensity, broader conditions: maybe those are dividers, too. My personal view is that you don't have to worry about that too much. You will know it when you see it.

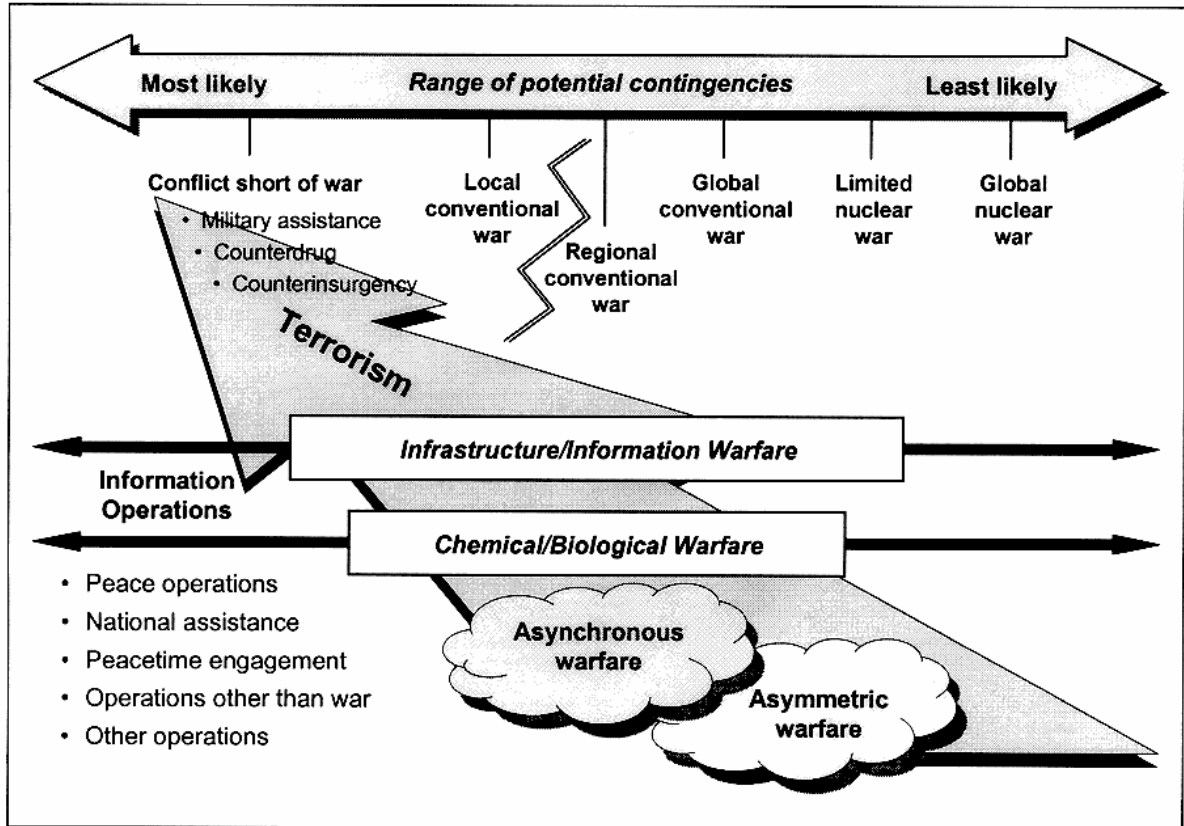


Figure 2
Categories of Conflict

Let me use Desert Shield and Desert Storm as an example of what I'm trying to talk about here. Desert Shield involved many nation-states, many borders, lasted six-and-a-half months, and included the exchange of what might be called strategic weaponry against strategic targets. Desert Storm lasted roughly 96 hours and was basically fought over one or two borders, and was relatively small in scope and scale. One could argue about the intensity of it. It did not, by the way, involve much opposition. That's the truth, and, indeed, it was far less of a conflict than the Desert Shield period in real terms. I would personally place Desert Storm in the local conventional conflict category and Desert Shield in the regional conventional category. That's just my view. By the way, I'm willing to be argued with or disputed on that point by anyone, because I think that you have to decide that for yourselves.

Terrorism lurks behind everything, and it's present at any part of this range of potential contingencies. If you're familiar with the

Anarchist Cookbook,¹ which is a 1950s-vintage exhortation to act against the establishment, the idea it proffers is that a way to attack the state or the system is for any person, without much motivation except dislike for the system, to acquire a pistol with two or three shells. Put the shells in the chamber or in the weapon, put it in your pocket, walk up to a person you meet on the street, whose looks you don't like (let's say he's a more conventional kind of guy, well dressed, like this gentleman in the back with the attractive necktie), shoot him with all three bullets, throw the gun down, and walk away. That's enough. That's written in the *Anarchist Cookbook* as a recipe for how to act against the established order. That's the lowest form of this kind of activity. The highest form is probably an organized group using much more capable weapon systems against much

¹ William Powell, *The Anarchist Cookbook*. New York: L. Stuart, 1971.

larger targets with larger numbers of people involved, and sponsored by a nation-state or by more than one nation-state. So the idea that terrorism is somehow a blanket term that covers many different kinds of activities is important, and it does cut across this range of potential contingencies and can occur at any time.

Infrastructure and information warfare are, frankly, not that new. Indeed, Sun Tzu wrote about attacking your enemy in depth and attacking your enemy's infrastructure—attacking the bases from which the enemy emanates so that the enemy cannot be sustained in his campaign.² That's a fundamental precept of warfare. However, nowadays, in the relatively developed civil order that we now depend upon, the idea of attacking an opponent in his depth, in his homeland, and destroying his infrastructure has taken on something of a new cachet.

Information warfare, when coupled to this, provides a potential to attack in depth, in the cyber environment, in nonlethal but nevertheless destructive and, perhaps, very complex ways. Anyway, that's the rhetoric we use. I personally don't believe that this has actually ever been proven. I'll just make a kind of ancillary comment here that information warfare, or information operations as we put it (which is kind of the overarching term for both of these taken together), has actually never been used against us by an organized entity. Hackers don't qualify. Indeed, I think we're in a period of time in the development of this genre of warfare in which we are in the action, reaction, counteraction, counter-counteraction period. We are challenged by some new technique and we have been able, to date, to find a response for that new technique. At some point, it is possible that we will be surprised by a capability or a technique for which we do not have a ready response. That's true. But, to date, that hasn't been the case. Indeed, the slow evolution of this form of warfare, in my view, is actually very good, because it's allowing us to find defensive mechanisms and response mechanisms. I would say that what we're doing is lowering the potential for this kind of war-

fare, or this kind of offensive activity, to succeed in the future.

Oettinger: May I make a comment on that, please, because I'd like to exploit it to lead into some of the subsequent speakers, and have you react to it. One of the differences, it seems to me, or one of the complications of that infrastructure/information warfare line is that as I look at your top line I see only one place, namely that counterdrug activity, where there is a question as to who is in charge. Even there, over the years, something has evolved: some of this belongs to the military and some of it belongs to the Drug Enforcement Agency or somebody. But in the infrastructure/information warfare scale, my sense is that there's still a considerable amount of questioning about whose baby it is at which phase of all of this, and that therefore there are some problems. For instance, if something belongs to a law enforcement agency or to somebody else, at what point does it get handed over to the military? These issues are more subtle than the top line, or than they appear to be, at least now. I raise this with you to get you to check your judgment, and to enable the class to form their own as they talk here and with later visitors who in some instances will come from the civilian side of that world. Would you care to comment on that?

Hughes: Yes. That's a difficult policy issue in the United States for sure—and I think it probably translates to many countries around the world, although different cultures and different legal structures handle it differently. As an example, if you're with me on the concept of attacking your opponent's depth and the opponent's secure homeland or the bases that the opponent depends upon, then in U.S. terms that means attacking the United States proper. In order to defend the United States proper from such attacks, we have made arrangements for cooperation between the military, other facets of the government, and the civil sector.

Information operations, especially if you include the public utilities, do involve commercial interests and the civil fabric of our social order. Traditionally, the U.S. military has not been much involved in that. When we

² Sun Tzu, *The Art of War*. New York: Barnes & Noble, 1994.

have been, frankly, it's been somewhat tentative and in some cases been unacceptable to the population because that means that the uniformed military becomes enmeshed in law enforcement and military activities inside the domestic structure. Now, as you know, our history is littered with events like that. Probably the easiest one to refer to was in the 1960s, when the National Guard and the Army Reserve, and also the active Army, in some cases, were called into the streets to preserve civil order in the face of civil disorder. That was not a happy event.

We're now having to rethink our policies on this issue because of the potential for this to transcend these kinds of jurisdictions. I'll give you an example. If a cyberwar-like event occurs and it emanates from outside the United States, you would expect the U.S. military to respond to that external to the U.S. borders, but once it enters the U.S. borders you would expect that, under our laws and our procedures, the military would hand off that internal activity to federal, state, and local law enforcement. That's the mechanism we've worked out. So, external to the United States, the military and intelligence services are responsible for this. Inside the United States, the Federal Bureau of Investigation and the attendant law enforcement agencies at each echelon are responsible for it.

Now, since this is quite different and requires expertise and capability that hasn't been present previously, we've had to restructure ourselves, rearrange ourselves, train and educate ourselves, and equip ourselves specifically for this function. One of the things we found (and by the way, it happens to be true of the next line on this chart, too) is that the U.S. military has the technical expertise, much of the equipment, a lot of the capability, and (I say this advisedly) most of the motivation to engage in this kind of activity: defending, or countering, as the circumstance calls for. So, unfortunately, we have, to some degree, defaulted to the U.S. military here because local or state law enforcement, and even federal law enforcement, haven't been able to respond yet, but they're building their response measures. The U.S. military doesn't want to have to do anything inside the social order here in the United States un-

less it's a true national emergency and we are legally compelled to do it.

Let's take public utilities as an example, which are part of the infrastructure and are susceptible to information warfare activities. So, let's suppose for a minute that you are talking about an external element interdicting our electric grid and thereby stopping electric power from coming to some particular sector and putting something at risk. The minute you hold that discussion, you have to involve the commercial enterprise and private interests and the public, because all of them are concerned and involved. Whenever you do that, you make it very complex, and the question of who's in charge is literally unanswerable.

The mechanism by which we take charge, the right of eminent domain of the government over the public good, is the way we have approached this. So, if there's no power in this part of Boston or Cambridge, then the federal government might take charge of that situation for a while, because any of the intervening or lesser alternatives are unsatisfactory. It's very difficult.

Chemical and biological warfare is the same kind of thing, and I won't belabor the point. I think you know it well. I'll give you one illustrative example of the nefarious, horrendous nature of this kind of activity, however. We're now talking, as you know, about bioengineering, and most of what we talk about in that field is very positive. But now there is the idea that you can somehow genetically or chemically or biologically engineer an effective agent to attack a particular ethnic or racial group and not attack others. That is a huge potential issue for us to come to grips with. Merely attacking the human condition with these kind of agents or their capabilities is terrible enough, but to make them so precise and to make them so discriminatory is really a problem for us.

The best example of this has been, and continues to be (and let's hope it is for a long time, unfortunately for our colleagues from Japan), the experience with the Aum Shinri Kyo cult in Japan.³ However, as part of this

³ The Aum Shinri Kyo cult carried out a sarin gas attack in the Tokyo subway in March 1996 that killed 12 people and injured over 5,000.

presentation I might predict (I'm not sure) that we will experience a kinetic energy terrorist event with a biological or chemical component. In other words, we will have an explosion and a chemical or biological agent will be associated with that explosion that will further contaminate and kill or debilitate human beings in the process. When that happens—and it will happen—it will change us forever.

Why do I say with such certainty that it will happen? Because it's possible. Because the knowledge and the capability are out there.

Student: General, is it true that in the World Trade Center bombing there was actually cyanide associated with that explosion, but it was burnt in the explosion?

Hughes: I don't think I can verify your information.

Student: For chemical and biological warfare, from the most likely to the less likely, do you think the impact of chemical or biological warfare would become much bigger than that of nuclear warfare, making a chemical or biological warfare weapon into a strategic weapon?

Hughes: To the best of my knowledge that's not yet the case. We use the term "weapons of mass destruction" to refer to these capabilities because they have the potential to cause so many human casualties. Neither chemical nor biological weapons have inherent physical destructive power over property or facilities or infrastructures, and the distribution of them across a human target depends very strongly on circumstances. It is very difficult to do. So we group them similarly to nuclear weapons, but frankly, in the scope and potential of their destructiveness they're much lower and in a different class from nuclear weapons. Their nature, if you're with me, is such that (as you can imagine, or you know about from historical examples) the people involved die in horrific ways, but the physical manifestation of the people—what they have built—is undamaged. Most of us humans believe that to be the worst kind of

circumstance, and therefore we treat them differently.

We probably ought to include here, by the way, a new (it's not new, but it's worrisome) sort of effort referred to as a use of radiological weapons. That has the potential for affecting many more people than chemical or biological weapons.

Switching to another kind of activity, after Hurricane Mitch hit, we put four combat engineer battalions into Central America. That's a good thing. Everybody thinks that's very important, and worthwhile, and we ought to do it. However, if you're a hard-nosed military guy, that's four engineer battalions you don't have available if you need them for the real reason we exist, which is to fight our nation's wars. So, while this is inherently good, and even noble, it is in some ways counter to the *raison d'être* of the American military.

I talked about asynchronous and asymmetric conditions earlier, so I won't belabor it except to say that if a terrorist act is perpetrated against us and we don't respond in time because the conditions don't allow us to respond, that puts us in an asynchronous condition relative to the terrorist. Indeed, the terrorists are on their own clock for the most part. They do not follow our time pattern; they follow theirs. We have to respond to it. That's the nature of terrorism, which is, by the way, an extra-legal and criminal kind of enterprise, as well as having military overtones.

Meanwhile, asymmetry is involved here. We cannot respond to a terrorist incident with a terrorist incident. Our culture doesn't allow that. So we will respond in a way that outsiders might actually perceive to be negative. I'll give you an example. We routinely send missiles downrange from a remote platform at about 11:30 at night, when the parking lot is empty. That's probably viewed, in part, in a positive light because people might realize that we Americans aren't seeking to kill innocent people or to kill people unnecessarily in a given circumstance. On the other hand, it's probably viewed in a negative light because we Americans—powerful country that we are, with great capabilities—are able to send remote weapons, absent human involvement, downrange and to destroy and kill with some lack of human contact in the bargain, if you

know what I mean. So we actually can't win at this game. That's why it's being used against us in such a powerful way.

Now, if you're with me on all of these thoughts (I realize I've spent a long time on this), this is my world. Every day when I wake up, I'm working in this environment.

Simultaneity is a simple concept. It is ridiculous to think solely in terms of two major theaters of war or two major regional contingencies. Several events, or even many events, can and will happen—and are happening—all over the globe, and we have to attend to all of them if we are going to attend to them at all. Whether or not we do is a policy decision. But if we do, we can be in

Korea and Iraq and Bosnia and do a couple of noncombatant evacuation operations and send engineer battalions to Central America simultaneously. That's the concept.

You'll really enjoy this slide: it's not that hard (figure 3). This is the intelligence officers' reason for existing right here in the military. Our job is to *apprehend*, to gather in, all of this information and to *comprehend* it in a way that we can deliver it to the war-fighter, the decision maker, and policy maker, and perhaps even the developer of weapon systems in such a way that they can better use it to make decisions, to carry out the functions of war, or to develop capability. That's what we're about. Each of these terms

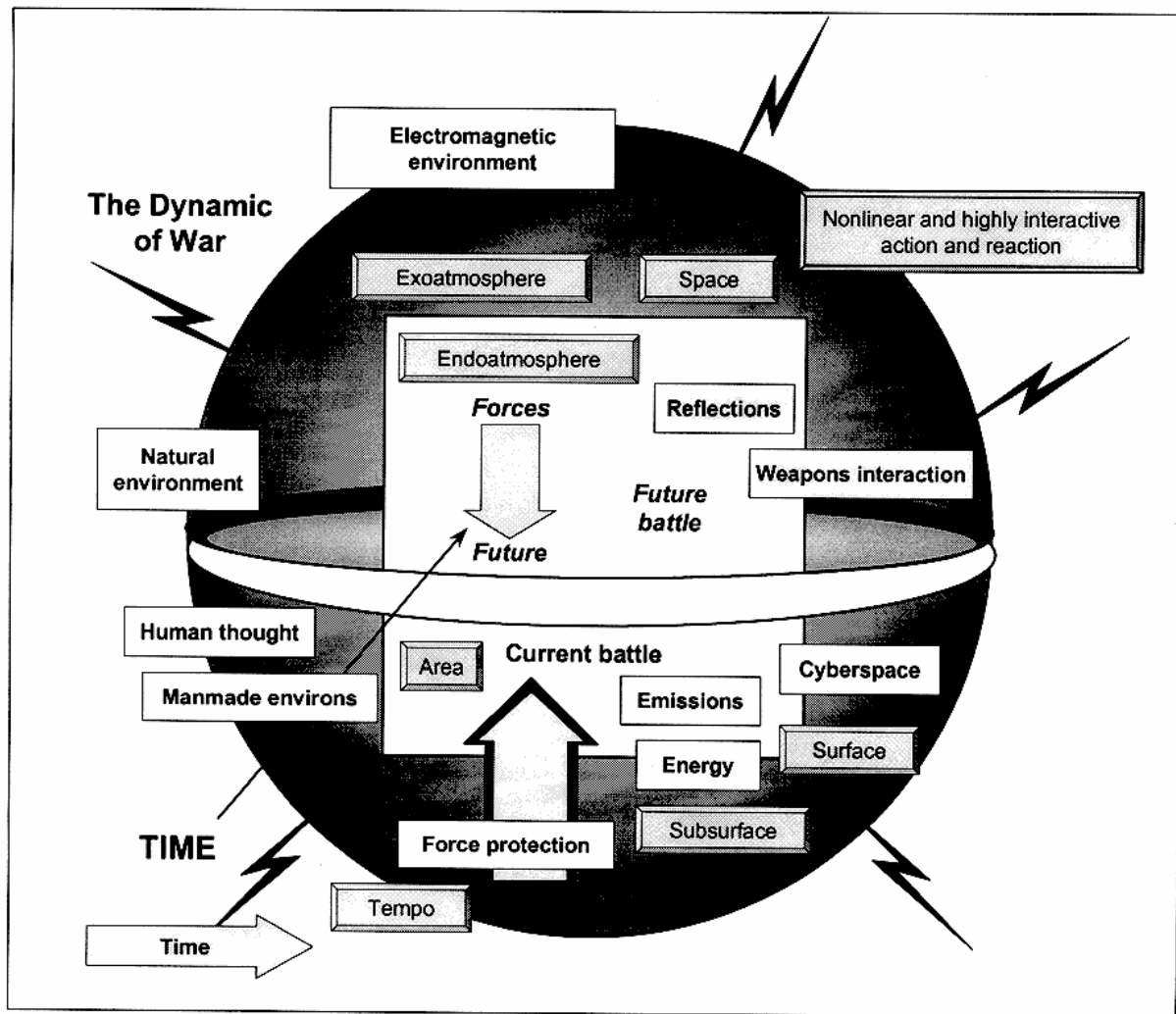


Figure 3
Battlespace

is self explanatory, and you know them as well as I do. There's not really anything new here except, perhaps, the ring signifying the electronic environment and the circle that represents the electromagnetic environment. Everything else is pretty traditional. The issue here is not to take them alone. None of these activities standalone. They all are part of a whole that is quite synergistic, very dynamic, very nonlinear, and highly interactive.

Capturing it all is very hard, and that's what we're supposed to do. That relates to this little graphic right here. That's why there are so many forms of intelligence and so many kinds of inputs that have to be

coordinated, collated, amalgamated, and focused in some way in a common picture.

The emerging global security environment involves many issues, and I just ask you to view it as it's shown on this chart (figure 4). The definition of those terms is up to you. I have no guarantee that my definition is right, so whatever you think is fine with me. Treat them literally if you will, but think of them all as a set of pressures pushing and pulling on the emerging global security environment and collectively driving us toward this uncertain future along with all the other circumstances I've tried to relate to you.

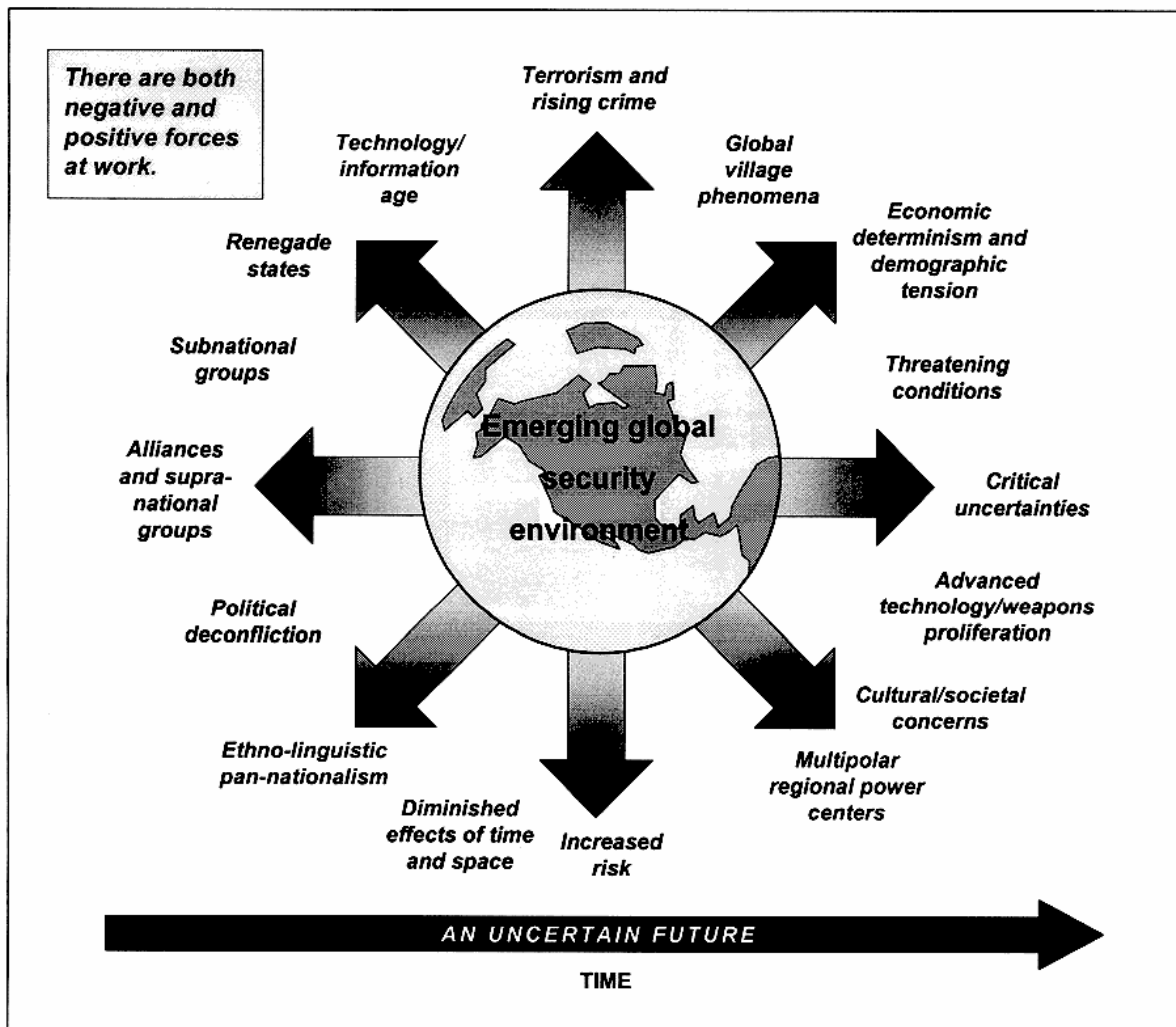


Figure 4
Global Change—An Uncertain Future

I'm going to talk briefly about a few of them. First, there are terrorism and rising crime. Imagine this for a minute. We had these camouflage-clad, muddy insurgents in the jungles of Panama carrying around very old rifles, shooting at the imperialist government forces, and we had these guys lounging around the swimming pools in Miami in \$2,000 suits. We referred to the guys in the jungle as the insurgents, and we referred to the guys in Miami as narco-traffickers. We somehow categorized them as different and separate (and they were quite different, by the way); however, they actually weren't very far apart, and they have now come together. The reason is very simple. The insurgency needed money, and the narco-traffickers needed the insurgents to guarantee their control over the sources of production of the narcotics, especially in Colombia, but not only there. The blending of these two has led to the defining of a new term: the narco-insurgent. By the way, it's been very beneficial for both. These jungle-clad guys with the mud all over them are now carrying around brand new weapons, very capable, and the guys lounging around the swimming pools in Miami have heart and soul. It's kind of an amazing thing that's happened. So we've got criminal activity supporting what might be a noble endeavor in some people's minds (it depends on how you look at that), and we don't know how to deal with it well. We're just now kind of coming to grips with this.

We talked about Marshall McLuhan's postulation about the global village; I think this audience knows it well.⁴ It actually has come to pass, and it is continuing to come to pass. You have the peasant on the steppes, the herdsman in Mongolia, the businessman in Tokyo, the rancher in the outback, the hog farmer in Omaha, the narco-trafficker in Barranquilla, the politician in São Paulo, you've probably got a couple of other guys (maybe a dilettante or two in Paris), and they all see essentially the same thing on television at the same time. They all view it differently. Everyone has his own cultural perception. But the fact is that they never before had such commonality of information or such com-

monality of purpose, and that effect is drawing us all closer and closer together. To use an example, Kazakhstan is no longer a distant place. It's not easy to get to Kazakhstan, but it's certainly not hard. So, everything's changed, and that has changed all of us.

Let me talk to you about a point that is kind of fun: ethno-linguistic pan-nationalism, a phrase that rolls off your lips easily. Here's the idea, and maybe this will ring true to some of you and maybe it won't. People who were artificially divided—sometimes many hundreds of years ago, sometimes more recently—by despots and dictators, or by wars and adverse economic circumstances, had common traits with the others from whom they were divided. I'm looking at my friend here from Taiwan. They had a common language, a common culture, a common religion, common ethnicity, common concerns, perhaps even common goals, but for a variety of reasons they were rent apart and separated.

In my view, when the former Soviet Union dissolved, those people around the world saw a window of opportunity. They are now taking advantage of it. The former Yugoslavia is the best example, but it's not the only one. There are people who believe they are distinct as Serbs, and wish to dominate the place referred to as Serbia. People who are distinct as Croats wish to dominate a place called Croatia, and people who are distinct from those two groups, whom we might refer to as Bosniaks, wish to dominate a place called Bosnia-Herzegovina. The Albanians in Albania and the Albanians in Kosovo, called the Albanian Kosovars, wish to re-amalgamate and have a greater Albania, which is independent from something called Serbia. Thus, you have conflict. It's kind of Eurocentric here, in a way, but that story is not even close to being over. There are many such groups of people who are going to re-associate and re-amalgamate against the wishes of a parent government. They are going to break borders, form new national entities, re-amalgamate, or re-associate in some ways for a variety of reasons and under a variety of conditions. Most of the time it will involve conflict.

⁴ Marshall McLuhan, *The Global Village*. New York: Oxford University Press, 1989.

Student: What kind of threat does this present to the U.S.? Just increased instability, or do you perceive a growing hostile problem?

Hughes: Both. There's no clear answer for any of this. It's circumstantial, conditional. It's very much about the way things evolve, frankly.

I'll give you another example. As of this morning, the smallest country in Africa, officially, was Rwanda. However, Rwanda is about 15, maybe 16 or 17, times larger than it ever was before, realistically. You could rename the country "Tutsiland," because the Rwandans have invaded part of what we refer to as the Democratic Republic of the Congo and have taken a lot of land that they view as their territorial imperium, because the people called Tutsis have traditionally inhabited it. They see an opportunity, and they're taking advantage of it.

That actually is the reason for many of the other insurgent movements, guerrilla activities, and overthrows of governments that have occurred around the world. We might refer to it as tribalism, but actually, it's ethno-linguistic pan-nationalism. It's people wanting to get back what they think is theirs.

Student: How did migration impact this?

Hughes: A lot. The idea of displaced persons is something that I probably thought, when I was growing up, we wouldn't be dealing with in such large numbers, and in such a significant way, in 1999. By our count (the U.N. recently provided numbers), there are about 17 million true refugees, or people who are in transit status. They are not in their home country and they cannot return to their home country safely or without fear. It's kind of an unknown number for migrants; it's not really clear who fits in that category, but there are a lot of migrants, and you can see the results of their migration virtually everywhere on the Earth. The transitory nature of people under these conditions, especially the people who are displaced by conflict—literally driven out of their homes and into havens nearby—has had a tremendous effect. Part of the effect, by the way, is economic, part of it is social, part of it is fun-

damentally human, part of it is political, and some of it is military.

A couple of weeks ago I visited Nigeria. It has 112 million people, heading to 120 million. They just had an election; there's little infrastructure; there are significant problems, and unbelievable poverty and despair among the common people. The pictures on TV are extremely misleading; the people who vote are quite different from the people who go hand to mouth every moment of every day on the streets of a place like Lagos. Then I went on to Ghana, which is a pretty nice country, and the conditions are not too bad. Next was Sierra Leone, where there are great difficulties. I went on to Guinea, a place where there is utter despair, no hope. The estimated life expectancy is about 45 point something years, 80 percent of the people can't read or write, and there are 700,000 refugees in the country from Liberia and Sierra Leone. On to Côte d'Ivoire, and then I went on to Senegal, which is not too bad.

Let me tell you: there's a big accident waiting to happen in West Africa, and it's called displaced people who are not in their homeland, who have crossed borders, who are generating a variety of societal conditions that the governments are not equipped to handle. We're trying to help, I guess, but the need for help is almost overwhelming.

Now, let's talk about the economy for just a minute. Economic deprivation is certainly a problem in the underdeveloped countries. Part of it is distribution, and part of it is an absence of infrastructure. That's true in Africa especially, but it's also true in some other parts of the world. Some places have built an adequate infrastructure and a support system to maintain the economic well-being of the population. Other places just have not. The difference, the disparity, between them is now obvious to me. By the way, I'm fortunate to be able to travel around the world a lot. I frequently go somewhere, and I see this disparity all the time. In my view, it's wrong.

The countries that have economic vitality and capability are producing more of it. Countries that do not have it are not able to produce it. Some of the most fundamental issues are involved here, like education. If in 1999 the population is not well educated (as in Guinea), if you cannot read or write, you cannot hope to achieve much over your rela-

tively short life span. It's just the way it is, and, frankly, you're bound to be a burden. The distribution of resources is also a big problem. Scarcity is occurring, and countries who are able to generate resources do so at the expense, in my view, of others in some cases.

Fisheries is an example. You now have a set of fishing countries distributed around the world (a couple are represented here, like Japan, which fishes as a necessity). Fish is a staple of their diet. On the other hand, it's one thing to fish in your natural national fishing grounds. It's quite another to fish in international fishing grounds or in someone else's fishing grounds, and because of that, disputes arise. By the way, a really worrisome effect for me is overfishing. Fishing grounds are being fished out and replenishment of those fishing grounds is kind of up to Mother Nature. The last time I looked, we haven't been able to salt the sea very well. So, we stand the chance of having conflict over competition for broadly distributed resources like fish, which some countries can go after and others cannot. Thus, the haves get more and the have-nots get less. That kind of an issue abounds, and it causes conflict.

I think the U.N. estimate is that around 16 percent of the fresh water we need is actually distributed. We've probably got about 85 percent of the fresh water we need, but it can't be distributed. It's in the countries that have been able to generate water storage, water production, and water distribution.

Oettinger: This morning's *Wall Street Journal* has a story that the Canadian parliament is in the process of passing legislation to prohibit the wholesale export of Canadian water to the United States.

Hughes: We're the biggest consumer of Canadian water. By the way, we're the biggest consumer of Canadian electricity made by water. I think it's a real problem. The only answer is to annex Canada. Conflict!

Let me try the topic "advanced technology/weapons proliferation" on you really quickly, and then we'll move off this chart. Here's a simple issue. Watch this—if I can get the damn thing to work. This is a pointer;

it's a laser. It has insignificant capability, but if I pointed this toward you and pushed the button, you would be offended, at the least. You might get madder than hell, and you might claim that I affected you deleteriously in some way. The fact is, I might have. This is a minor example of what we're talking about here.

Picture a weapon, like a missile, that can reach your homeland (it doesn't matter where your homeland is), and you can't tell when it's coming toward you. This is a significant problem for us. We've been living under this problem, by the way, since the post-World War II environment. Russia has had that capability. China has had some capability over that time, and a few other countries have had a little bit of capability here and there. But they were viewed as acceptable conditions because the countries we were dealing with were viewed as "dependable." They followed a set of constructs and agreements and methodologies that we could depend upon.

Flash forward to North Korea: somewhat undependable, somewhat difficult to deal with, somewhat mysterious, frankly ... and, by the way, building, arguably, a transcontinental missile capability with a weapon of mass destruction on the end of it. Our discomfort level should go up. This is hard for everybody to handle. Nobody likes to hear this, and everybody gets mad, because it's a problem and it defies easy solution. My job is to go around raising these kinds of problems, and that's why I'm so popular. But the truth is, it's real. I didn't make this up, and I didn't make the missile. I didn't make this laser pointer up, either. If you magnify this by a quantum effect of some kind, 10X, then this is a weapon, and it's a mysterious weapon. It's short, fast, fairly direct, and potentially extremely destructive, and something we didn't have to deal with before. That's what's happening to us right now. Consider all of that and all these other things that we didn't have time to talk about that are driving us toward uncertainty.

By the way, I am frequently referred to as the Prince of Doom. My thought process, my manner of talking to you, is gloomy as the dickens. I am in the "doom loop," as it were. But I'm trying to convey to you my version, anyway, of the truth, and it is gloomy. I apologize in advance.

In the U.S. context, we think Africa, Southwest Asia, Central and Southern Asia, Russia, Southeastern Europe, Korea, and China are major military challenges; of course there are also unanticipated events and wildcards. That statement lacks precise descriptive characteristics you can deal with. For instance, what does "Africa" mean? It means that conditions in Africa are going to hell in a handbasket, and somehow we're going to be involved, selectively, occasionally, or circumstantially. We can't solve every problem that Africa has. In fact, right now, generally, our policy seems to be: Do the best we can with very few resources and save American lives whenever we can.

All of these constitute major challenges for the United States, including something called "unanticipated events and wildcards," like Hurricane Mitch. Keep them in mind,

because this is one part of what we've got to deal with.

Let me show you the rest. The next vugraph is going to give you a headache. What I've just been talking about on the foregoing chart is right here (figure 5). Just read these boxes: advanced technology and all the problems we've already talked about; information operations is information warfare: terrorism, resource scarcity, and organized crime. The drug trade is kind of a separate issue from the rest of organized crime because it is so different and so difficult. Then we have proliferation and all that means; migrants, which goes back exactly to the earlier question; and the environment, which, by the way, is a problem for us and is changing. Operations other than war and peacekeeping are differentiated from outright conflict. Throw all that into the global condition of an

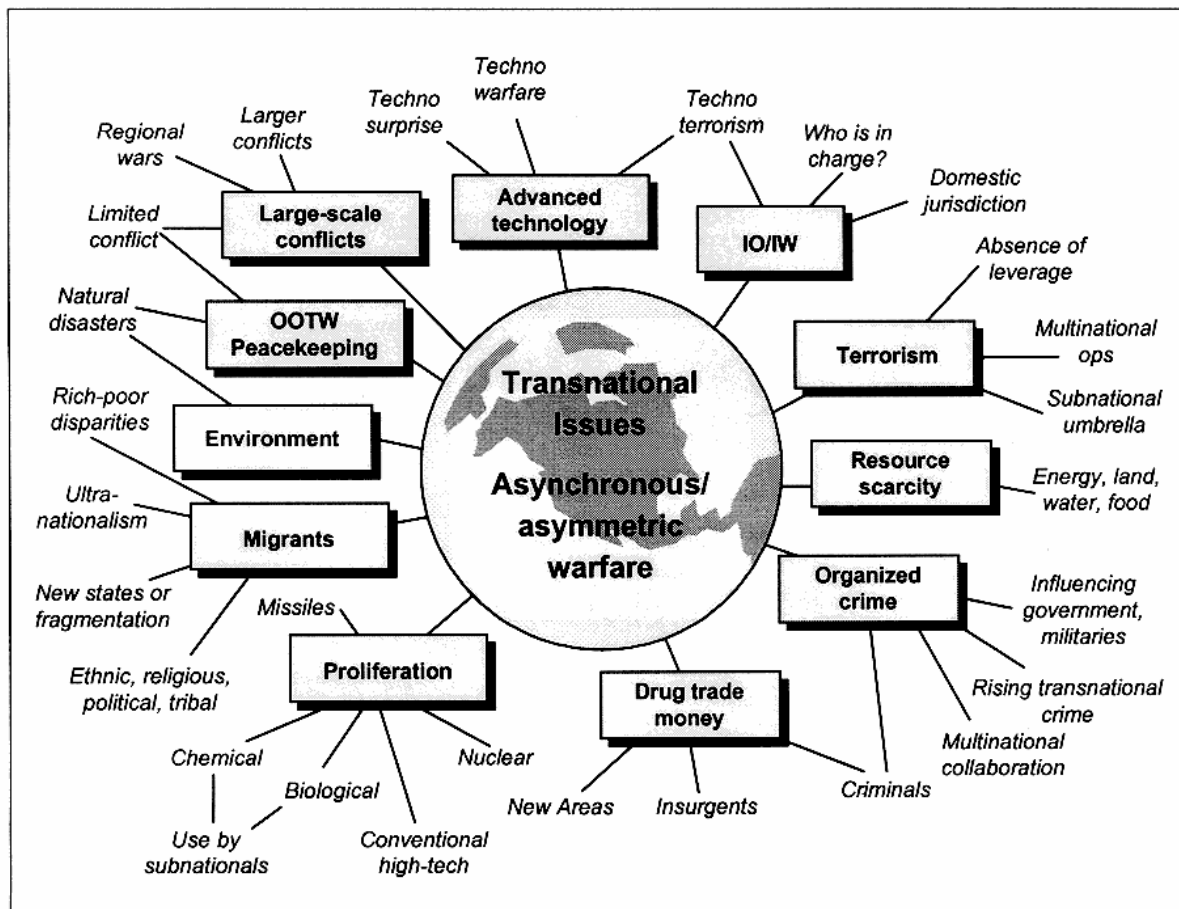


Figure 5
Present and Future Challenges

asynchronous and asymmetric circumstance and deal with it globally or transnationally, and we've got one hell of a problem.

I realize that if you're an average guy walking down the street, this isn't very exciting, and it isn't very worrisome. But for somebody like me, this is my life. I wake up every morning and I'm faced with this, and I go to bed every night thinking about this. I guess you guys must too, otherwise you wouldn't be in this class.

Another issue I have to deal with is the nonlinear dynamics of the millennium. I hate to talk about this because it is really hard, and it's fraught with cultural danger, but I'll give it a try. Think of the Y2K effect as a fuse on a kind of collective explosive device made up of various features that I'll mention. Whether anyone likes it or not, there is a millennial expectation. Despite our best intellectual efforts to kind of rationalize this and say, "Wait a minute. There is no millennium. This is a trick of the Gregorian calendar. That's the only reason we're approaching the year 2000," nevertheless, we're approaching the year 2000 and you can't tell most people there isn't some kind of millennial expectation or anticipation, whether it's real or not. There is a fear of the unknown. The unknown is always before us, but it's magnified in the millennial context, and culturally, historically, and traditionally we've been conditioned to believe that.

There are, by the way, incidental events that come out of the Y2K issue, some of them driven by the network effect. It could be that some of our systems, not merely here, but around the world, won't work right. If your warning system for a fire in a building doesn't work right, and the fire department doesn't respond, and the building burns down, that's an ancillary effect from the fact that the warning system didn't work right. You probably wouldn't be happy with that, and if you happened to die in that fire it would become acutely personal. If you go into your home one morning and turn the tap on and water does not come out, what might be the next incidental effect? Most Americans, by the way, being focused on creature comforts, would immediately default to wondering whether or not the bathroom will flush. If it will, we're okay for a while, and if it won't, we have a serious problem.

Oettinger: I'm convinced, by the way, that Kenneth Starr was responsible for turning the power off in Belmont, Massachusetts, last night just as Monica Lewinsky started appearing on Channel 5.

Hughes: Actually, it's entirely possible that someone was responsible. I don't know if it was Ken Starr.

Let me tell you about an interesting effect, by the way, which actually belongs under both incidental events and localized conflict. About two months ago, an electric cable in San Francisco was improperly grounded. You probably read or heard about it. This meant that 289,000 (give or take a nickel) individual electricity customer users—that's buildings, businesses, homes, transit vehicles, all kinds of things—were affected for about eight hours total. One of the interesting observed effects was that the cellular telephone system didn't work because the repeaters were tied to electricity from the electric grid that was out. So, when the BART (Bay Area Rapid Transit) trains quit running and literally stopped on the tracks, the people who were on those trains did what a lot of other people in San Francisco did. What's the automatic reflex action when you can't get where you're supposed to go? Communicate, right? The regular wire telephones worked. So, instead of two people wanting to use the pay telephone, 20 wanted to use it and demanded its use. Their urgency of need was greater than anyone else's. Fist fights broke out. The area had all kinds of problems focused around the damned telephones. So, this incidental effect actually transported itself all the way over to a very minor, insignificant form of a localized conflict.

Let's suppose, for a minute, that not only couldn't you communicate, but you also couldn't get to your food supply, your water supply, or your support system—you couldn't talk to your family or your friends. The conflict might burgeon a little bit. You might have a problem.

One of the unintended consequences is process control. We're creatures of habit. We all live in process-style circumstances. If the process is interrupted, the effect of that interruption is very dynamic and very difficult to deal with. We have a religious conviction,

whether anyone likes it or not, and there are some crazies around. For example, you probably read about the Concerned Christians group that was expelled from Israel in January. Whether we think it's stupid or not, their mission was to fire up Jerusalem some time around the turn of the millennium. That's what they were planning to do. Where were they sent? Back to Denver. I expect Denver to be fired up now.

The Aum Shinri Kyo were apprehended. They were incarcerated. They were tried. Many of them committed suicide, or were lost in some other way. However, the remnant of the group, by Japanese reporting, is now resurgent. It has more members, and by the way, more members are joining. The reason is the millennium effect.

That leads us over toward weather and other natural phenomena. Normally, a volcano goes off, and it's not a problem, other than that the volcano erupted. What if the volcano goes off in November? Some people will think the damn volcano went off for a different reason. The fact that November has no relation whatsoever, scientifically, to the end of the millennium, because in precise terms there is no millennium, has nothing to

do with it. It has everything to do with perception.

We do have a problem, by the way, with weather. 1998 was the hottest year on record. 1997 had been the hottest year on record. The trend is very short. It may not prove anything. 1999 might be the coldest year on record; I don't know. But the trend is kind of toward a climatic change with interesting possibilities for the future. The bad news, by the way, is that it's not happening in 1932, it's happening in 1998 and 1999, which just happen to be approaching, at least as people perceive it, the end of the millennium.

That brings us to cultural perception, and that's the real issue. I'm not wishing to get into your mind, but I'd be willing to bet that every one of you in this room, one way or another, has a cultural perception about this period of time, whether you like it or not. No matter how objective, or how intellectually capable you are, I think you've got something in the back of your mind that says there's a problem. I could be wrong. Maybe I am.

All of the foregoing has driven us to an evolving paradigm (figure 6). Here's the way I would put it, by the way. Although we had

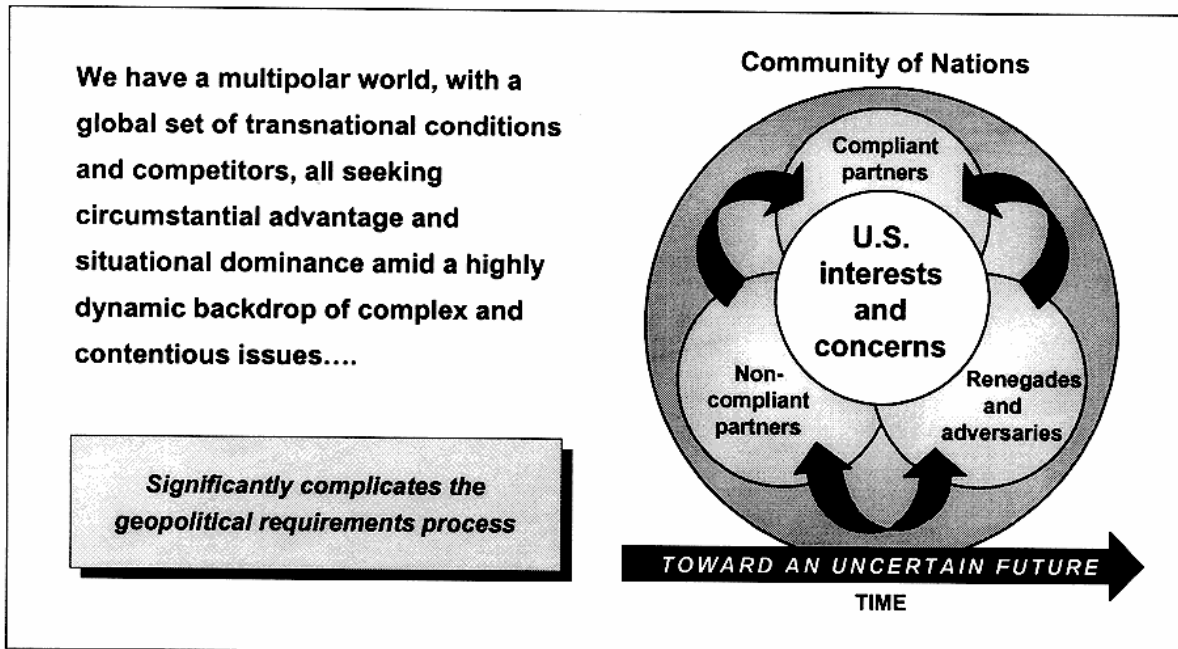


Figure 6

A New Paradigm is Evolving

this bipolar world, it was in balance. It was like one of those globes in the micrometer, and everything was kind of working well. On one end of the globe we had those Commie bastards. We knew they were no good. We didn't like them and they didn't like us. Us democratic big guys were on the bottom end of the globe, and we knew we were handsome, good-looking guys, and *right*. Then everybody else kind of clustered around us, because those Commies gave up! Those no-goods! They quit on us, and the globe got out of kilter. Some people say that what we have now is a unipolar world. It's fundamentally not true. America might be strong, but it is inconsequentially strong in global terms. We can't influence everything in every place. In fact, we don't. So what we've got now is a multipolar world. We are a strong nation, that's true, but we are merely one nation.

By the way, here's a little parenthetical story about China. I happened to be among the first group of American military guys to go over to China after normalization, and I met with our counterparts in China who were probably colonels, old grizzled-looking guys. You know how colonels are. (I'm just checking my associates out here; there are a couple of them in this room, I guess.) We were supposed to have a two-hour talk with these guys, and translation was making it difficult, but it ended up being about six hours.

There was an older guy there. They still weren't wearing ranks yet, so I didn't know exactly who this guy was, but he had on a Long March badge, which kind of meant he was one of the guys. You could see him champing at the bit to say something. We Americans were spouting our typical imperialist dialectic, in their terms, and those Chinese guys were giving us what for and all that. Finally, this guy just couldn't stand it any longer and he said, "You know, you Americans have got it wrong. Let me tell you how it is." He got our attention, Long March badge and all. He said, "We Chinese believe in the anthill school of warfare. We Chinese have a big anthill here. It's not very nice, frankly. It's got a lot of problems. It's a little shoddy. But boy, we've got a lot of ants! You Americans, on the other hand, have a wonderful anthill. In fact, we quite frequently refer to it as the Golden Anthill. To be honest about it, a lot of our ants would kind of like

to come over and join your anthill, because boy, is it nice! But in relative terms, your anthill is kind of puny; it's pretty small. Now, if you Americans would like to fool around on our anthill, assemble your ants and march them over. Otherwise, stay the hell out of our anthill."

It was fairly clear to me, and frankly, it followed the Chinese perception of the center of the earth, kind of the focus of their version of the universe. They don't like the idea of outside interference in their part of this here global condition. That came across to me. We did not discuss who had the biggest can of Raid, but if we had discussed it then, the answer would have been different than it is now. Now China has a very big can of Raid. If you can follow that metaphor, I think the point was made for me that China is very much a competitor, very much a different entity, very much a nation-state in its own right, and not to be interfered with.

So now we've got this multipolar world with a distributed set of global competitors. Some of them we, the United States, call compliant partners. Some of them we call noncompliant competitors. Frankly, I think you can actually be in those two boxes simultaneously. You can agree with the United States on some things, and directly and violently disagree with the United States on some other things, and be the same people or the same group.

Oettinger: It sounds like France.

Hughes: It sounds like a lot of countries! It could happen. It's circumstantial.

Then there are renegades and adversaries. Once you're in that box, you probably can't be anywhere else. Sometimes you could have been something else and you moved into that box, and I would even say, conditionally, you could move out of it and into one of these other boxes. We don't view Russia in the same way we used to view it. That's absolutely true. Things have changed. On the other hand, once you're in the "adversaries" box, you probably can't be something else without moving physically to a different category.

Our interest and concern is that you've got to deal with all three of these groups. De-

fining the enemy or the opponent in military terms is almost impossible under these conditions. You'll know the enemy when you see them, and it's very conditional and is based on circumstances. In diplomacy and economic interaction it's at least as hard, if not harder, to decide who your actual opponents are. I think this is going to continue.

Several high-order, emerging threats are a problem. We've got a growing problem of weapons of mass destruction and a growing problem with missiles. It's just as plain as the nose on your face. Proliferation is an issue for everyone on the face of the earth. We don't have time to go into some of the other issues, but, for instance, in deference to the earlier question, there will be more migrants and refugees. There's a growing resource scarcity around the world. Those two issues are very important. Then there are all the things we've talked about today, such as terrorism, information operations and information warfare, and advanced technology, as well as an environmental effect.

Oettinger: Maybe you'll get to this, but let me pose the question as we get near the end.

Hughes: I'm going to wrap this up shortly and then we can talk.

Oettinger: You described yourself as Doctor Doom and so ...

Hughes: The Prince of Doom.

Oettinger: The Prince of Doom, excuse me. This is academe.

Hughes: It's okay. I kind of like that royal title.

Oettinger: One of the reasons is partly your position, but another is that it may even be true. Historically, while the gloomy-doomy things have happened, there also are a whole bunch that haven't happened. Therefore, the conditions for stability, the conditions for *not* killing one another, it seems to me, are also of interest. Are you going to say anything about why some of these things will stabilize rather than blow up?

Hughes: Yes, but not much. I'm going to get there, I think. But you're right. You see, the negative effect is the one I expect. Almost everybody says, "Man, this guy doesn't have any good news." This is absolutely true. I don't have any good news.

Now we get to global population. In 1750, we were at right about 791 million on the population trend line; as of the end of last year, we were at 5.9 billion. I didn't make this up; this is from the Population Reference Bureau of the World Health Organization of the United Nations. Developed countries have very little population or growth. The underdeveloped or developing countries are where it's at. By 2050, give or take a nickel, we'll have somewhere in the neighborhood of 9 billion people on the face of the earth. We're having trouble right now with about 6 billion.

Here's the way it shakes out right now in 1999 figures. Ten years ago, nobody would even have imagined Nigeria could be on a chart of countries with a population of 50 million or more. Some traditional countries that we think of as having a lot of people really don't, in relative terms. There's a big jump between 166 million people in Brazil and 206 million people in Indonesia. These countries here have got a lot of people in them. These countries have a lot of people contextually, by size and circumstance. These are big numbers.

Now consider the projections for 2020. Nigeria goes from 110 million to a projected 215 million people in 20 years. Mexico will have 125 million people, 30 million of them in one place, Mexico City. Pakistan moves from 148 million people in 1999 to 248 million. The top four—China, India, the United States, and Indonesia—stay the top four.

One country is expected to lose people: Russia. It will go down, arguably, by around 10 million people. That's the projection. It may not happen. That's very interesting, isn't it? It shows you, in some ways, where the problems are going to occur.

Global urbanization poses additional problems, as mega-cities grow in less developed countries. Latin America, right now, has a total population of about 500 million, and the trend in Latin America has so far been toward a great population increase. They've

been able to handle the overall growth and the urbanization pretty well, and they're probably going to be able to handle the rest of this because their projected growth isn't that great, and it isn't that steep.

There's a big difference between Asia and Africa. Asia has been able to handle urbanization, because it has infrastructure, and the Asian nations are building it all the time. Generally speaking, in large parts of Asia they're going to suck in all these people and they're going to be stronger for it.

We already talked about resource scarcity. I'll just highlight that we have a lot of food production capability around the world. Quite often it's distribution that's the problem.

We've got a failing state problem. A few examples are Somalia, Russia, and the former Yugoslavia. Somalia is not a country, it's now three countries: Somaliland in the north, Puntland in the middle, and Somalia in the south, and there is no central government. There's no central identity, even.

One could argue about Russia. There is nothing in Russia's history that says it's going to fail as a nation-state. However, the traditional elements of power have been degenerating over time, and they have a problem.

The former Yugoslavia has failed. Maybe it was destined to fail merely because of the change in the leadership. One could argue whether the individual countries that have come out of the former Yugoslavia are failing or succeeding. One could ask the question: If the U.S. and our NATO allies and other partners were not present in the former Yugoslavia, would it collectively have failed? I personally believe the answer is yes, with the notable exception of Slovenia.

The changing nature of warfare is a problem for us military guys (figure 7). I'll give it to you in a nutshell. If you're fighting the United States, not somebody else, and you present a static array of targets on the surface of the earth, we will find them, target them, and destroy them with alarming precision and frequency, because we have the capability to do it. Thus, our opponents are seeking asynchronous and asymmetric ways of fighting us. By the way, many of our opponents are going underground. They are using denial and deception. They're using a

- **Traditional warfare less likely**
 - Some notable exceptions
 - Desert Storm: "highway of death"
- **Asynchronous/asymmetric war the wave of the future**
 - Khobar Towers
- **War in the urban environment more likely**
 - Military operations in urban terrain (MOUT) facility
- **Weapons of mass destruction must be anticipated**

*Simultaneous events
may have large war effect.*

Figure 7
Changing Nature of Warfare

variety of tactics, techniques, and procedures in order to avoid our strengths.

Some countries, like Iraq, still haven't gotten the point. So, every day they fly an airplane over this imaginary no-fly line, and we blow something up, or every day they shoot a few artillery shells at us, and we blow up the artillery. After a while they're going to have to quit. It's going to take a while because they're not bright.

We should look out for all this stuff, and this is true. It's darned hard to find a vacant lot to hold a war in. Even in the Middle East this is hard.

Simultaneous events may have large war effects. Let me just address that briefly. The newspapers are now openly describing the American military as suffering from a loss of morale, of motivational intent, and of people. People are moving out with their feet because they're unhappy with the conditions they're in. Let me tell you why. The op tempo is too high. A guy will wake up in the morning, and he does not know for sure where he is going to be at the end of the day. Let's say you were a common soldier, and you said in 1994, "I'm deploying to Bosnia. We're going to save the world, and I'll be home in six months." Three deployments later the world is not saved, he's not home, he's got a problem, his life lacks clarity and closure, and he leaves. The good news is we're getting enough people to come in to kind of keep it

going, but we're worried, and we're holding a public debate because of that.

Oettinger: That's curious. Where are they going? You're describing the conditions in the civilian sector as well. As I observe students and so on, they are either overworked or unemployed. There seems to be no happy medium.

Hughes: I agree. In fact, we were just talking with a commercial enterprise in the last couple of days, and they're working as hard as we are. But they're getting paid a lot more for it, and they have flexibility that we do not have. One of the things they wanted to know was how it would be if we made reference to commercial enterprise and had people come in and work with us inside our organization to see how things were done. My reply was, "No problem if you want to take a polygraph examination, tell us everything about your

lifestyle, and be investigated. If you're willing to accept that, no problem." Very few people want to accept that.

By the way, in the military, as an example, I come under the Uniform Code of Military Justice. You true civilians do not, and that's quite a difference. We might want to examine that sometime. So there are lots of reasons why this spirit exists.

I'm now speaking for the American military and not for anybody else. We've got to adapt to today's and tomorrow's conditions. They're real for us, whether you like it or not, and so we've developed a set of strategies. We're going to try and figure out what to do and how to do it. The turmoil is likely to continue. That's my bottom line to you.

I'll wrap this up with three slides. The first one, on future trends, is again motherhood and apple pie (figure 8). There's nothing that would surprise you.

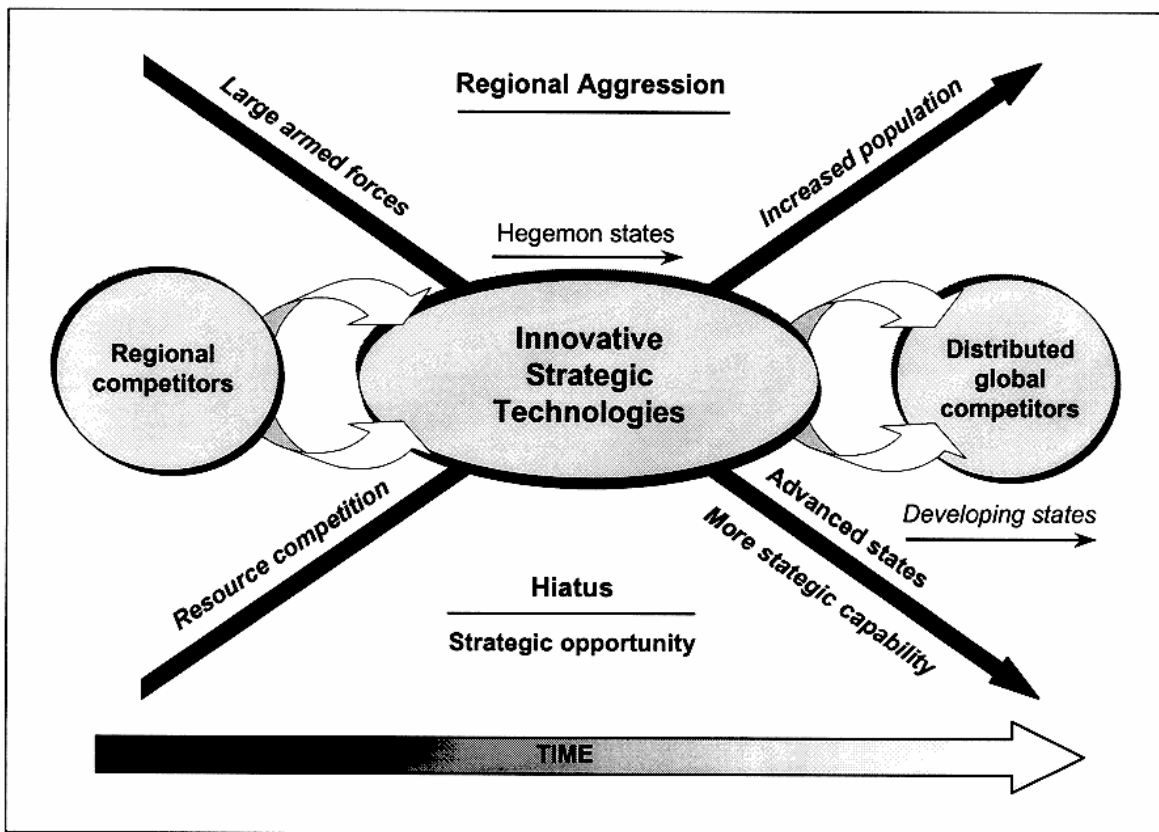


Figure 8
Future Trends

The United States has a potential future problem with alliances and coalitions. How many countries are there potentially in North America? It depends on how you count and on how you define North America, but let's say you start up from the southern border of Mexico. Forget most of the Caribbean, it's too early. So we count Cuba; Puerto Rico, which hasn't made up its mind yet; and the United States we'll call three. We'll say Quebec, which arguably has a separatist intent; New Atlantic in the north, call that five. We'll say that Canada will divide into eastern and western portions and we'll call that a couple more. Baja California, which is an entity in its own right in a lot of ways, doesn't make much reference to Mexico City. Chiapas State was mentioned earlier by somebody; perhaps even Guerrero State; there's Mexico proper; and then there's Texas. The fact is that even in North America it's not simple, and we're likely to encounter this, in my view, over many years.

One of my favorite quotations, by the way, comes from Helmuth von Moltke. Von Moltke was a Prussian, so he used his monocle, stuck his left foot out, and he said, "Gentlemen, I note that when you brief me you brief me that the enemy has three courses of action. And, gentlemen, I note that the enemy generally chooses the fourth." That's true.

I already told you that terrorism is going to happen to us, and information warfare has happened to us. I think it's good for people to review our success rates against outsider attacks occasionally. It is a hell of a record.

We talked about insiders earlier. I won't belabor the point. I will tell you that in the American military we see insiders as the biggest problem. In China, in ancient times, they had the courier. They gave him a little satchel, and a bunch of envelopes sealed with wax. The courier's job was to eat rice balls for a couple of days, wear out two or three horses, ride to the distant outpost, and deliver his messages. It was a good job. They paid him well, gave him a concubine or two, and treated him right. What the courier didn't know was that after five, six, or seven deliveries, they killed him. They didn't trust him any more, because they didn't know what he knew or didn't know.

We've gotten more civil nowadays. However, if you're a configuration manager, or if you're a code clerk today, and you've got the keys to the kingdom because you run the automation system of a governmental service or an intelligence organization, you are potentially the problem. You're the focus. Everything else is interesting, but we've got to worry about these people. In my organization, as an example, those guys have to take a polygraph every three years, instead of every five. They have to suffer great indignities about their personal lives. They have to go through all kinds of invasive activities to continue to do that work. That's why we're all so happy.

You know about infrastructure warfare, and I won't belabor it. Let's talk about technology for just a minute. We need to have a little time for give and take here, but I've got to give you this warning. Advanced technologies can have both positive and negative effects. The technology behind electrodynamic weapons can have a great and positive impact on the medical, transportation, and telecommunications fields, but you could turn it into a weapon, and some guys are going to do that.

I'll focus on nanotechnologies. It is very simple. What was slow and heavy and big can now be made fast and light and small because of micro or submicro technologies. I've used this catch-all phrase, nanotechnologies, which I'm sure some of you recognize as imprecise. But that's the case. We can do things now we couldn't do before, and part of it is because of that decrease in size. I wish this were all positive, but it isn't, and so I have to deal with it in negative terms, and I have to worry about the potential for all of this.

You asked me for positive input, so I'm going to give it to you. There are some good things about the future and here they are, in my view (figure 9). The community of nations does work, and it has worked. One could argue that it has also failed, but it's working, and it's better than nothing. I think it's very positive. I personally believe in the United Nations. I believe in the Organization for Security and Cooperation in Europe. I think the Association of Southeast Asian Nations is a good thing. I think those associations and organizational entities around the

- Community of nations working together
- Political deconfliction in advance of conflict
- Improving forms of global interaction
- A “stable” economic grid

New technologies: positive and negative impact—on balance offer great hope.

Figure 9
Positive Future Trends

world have a sense of purpose, a collective focus, a vitality we couldn't get any other way, and it is very positive.

I do think we can deconflict, mainly through diplomacy, in advance of conflict. I must note, in intellectual fairness, that in most cases deconfliction through diplomacy has not solved any of the underlying problems. But it has avoided conflict, and that's good enough for me, because I couldn't solve the problem with conflict anyway. So I'm happy about this. I think it's a very positive trend.

Forms of global interaction are definitely improving. One could argue about whether or not it is a good thing that the most popular television show around the world is *Baywatch* (which it is). I personally don't mind it, but it depends on how you look at it. I'm here to tell you that the cultural effect of exporting *Baywatch* to Kazakhstan is something we need to worry about.

Student: *Star Trek* would be better.

Hughes: Okay, *Star Trek* may be better for you. You're too young. I bet your father likes *Baywatch*. Just trust me.

I personally believe that we have been buffeted by economic turmoil, especially in Asia, that in past years would have led to global recession or depression. But because we have a relatively stable economic grid, we not merely have been able to weather it, but, frankly, the future looks pretty promising. There are still lots of problems. Japan and other countries in Asia are not out of the woods yet. We all know that, but the issue is

that they have survived, and they are going to continue to survive, in my view. By the way, I think the gross domestic product (GDP) trends are very positive. Generally speaking, my view is that GDP for most nation-states is on the rise and is going to continue to rise. Some of the rise is inadequate to the need. I've already pointed that out, but the trend is good. I think this is all good. By the way, technology, generally speaking, can be positive or negative, depending on how you look at it, but you shouldn't forget the positive side of it.

Finally, I'll show you my overall conclusions (figure 10), and stop right there.

- Little potential for global peer competitor
- Major powers will be more competitive and will challenge the United States in a regional context
- Global distributed competitors will be more numerous and ambitious
- World community will continue to face transnational dangers
 - Terrorism
 - Missiles
 - Drug trafficking
 - Resource scarcity
 - Rising transnational crime
 - Weapons and WMD proliferation
 - Migration and refugees
 - Information warfare

General instability on the horizon

Figure 10
Conclusions

Oettinger: I promised to get you to the airport in time for your plane, so we've got to wrap things up right now. Thank you for a fantastic presentation. I have a small token of our great appreciation.

Hughes: Thank you very much. I was having a good time.

Oettinger: We were too.

Hughes: I'm sorry, sir, but I have a small token of *our* appreciation.

Oettinger: What's that?

Hughes: I'm taking advantage of your class here and this group to tell you "Thanks" by giving you the Director of Military Intelligence Certificate of Merit for your wonderful work in support of your nation, especially in support of our agency. I would like to let everybody know this is real. It's not something that I made up. We actually haven't given very many of these out to nongovernmental people. You can count them on one hand.

Oettinger: What a delightful surprise! Thank you!

Hughes: Thank you. It's a tradition in the American military that we give out our unit coin. That's what I've got here. This one we have a little story about. We say it's secret, so it's seldom seen, much coveted. Everybody wants one. It's frequently awarded, however (just a little humor there), to good soldiers. You qualify.

Oettinger: Thank you very much.



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