



6.3 ANALYSIS OF INTERAGENCY ACTIVITIES AND COMPLEX OPERATIONS

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INTRODUCTION

Today, I will discuss analysis of interagency activities and complex operations. By complex operations, I mean operations such as those in Afghanistan and Iraq. In terms of how that fits into the focus of this symposium, I hope you come to comprehend my short history of the key moments of our problem-solving journey: (1) it took us awhile to understand that irregular warfare is not just a defense-related or only a military-related problem, (2) it is actually an interagency problem that we need new tools, techniques, and methods to properly prepare for and counter, and (3) there are actual tools, techniques, methods, and best practices that we have learned along the way, which probably apply to cyber and resource warfare.

THE TIMELINE

My first experience with realizing that there was a new problem out there was in 1995 as a result of Bosnia. We were tasked

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to look at the deployment of military forces in support of coalition forces that were already in the country at the time. We actually did not have any tools to deal with that; it was a new problem. The alarm bell goes off, why did we not see this? Why is there not something on the shelf that we can use?

In that particular case, we adopted a commercial war game, called Silver Bayonet, a Vietnam-based game. That, however, was the first warning sign that there was a new problem out there, rather like cyber or resource warfare that no one had really tried to tackle, certainly in the last 10 or 15 years prior to this period.

Then, in 1996, the Cornwallis Group was formed. Seeing as this is a predominantly U.S.-based audience, I feel I need to point out this group has nothing to do with the Cornwallis that lost the War of Independence. This group is actually named after his father, who has some Canadian links. The formation of this group was an opportunity to bring practitioners, academics, and people who worked in government and non-governmental organizations across DoD and other departments together to present papers and discuss issues for about a week every year.

This annual meeting continued for approximately nine years, until 2005, and it was the primary mechanism by which people in this community actually came together and talked about analysis products. My observation today is that if there is not something like this in cyber warfare, you need to start one. In 2004 or 2005, there was a critical mass of analysts from all walks of life coming to tackle these types of problems. Certainly in the early stages, a lot of heavy hitters had either presented at Cornwallis or at least been part of the group.

Let me move back to the year 2000 for a moment. The first simulation model of peacekeeping tasks, called Diamond, included diplomatic and military warfare in a non-warfighting domain. This model was the first to look at more than two sides of a conflict; we could model a non-governmental organization. We modeled the population and then could interact with it.

Now, just to mention briefly, fast-forward to 2007, when the Military Operations Research Society (MORS) acknowledged

irregular warfare as a mainstream problem. This is a key community; it is not just a fringe group.

Finally, in 2008, the Africa-scenario analysis was a dedicated attempt by Office of Secretary of Defense Peaceful Nuclear Explosion (OSD PNE), the Joint Staff, and a few others to throw half a dozen different tools into looking at an interagency problem. Of those tools, maybe only half actually modeled military forces. The others looked at elements like corruption and negotiation stances. This was analysis done to form military planning and decisions, but also predominantly to deal with interagency issues.

So it has been a long journey over those 14 years, and it is not over yet. We have talked about some of the limitations in dealing with the interagency analysts; they do not have the same critical mass as we do in DoD. But that's been a long journey.

FRAMEWORK FOR INTERAGENCY ASSESSMENT

A number of authors have looked at frameworks for analyzing these issues. I remember, in 1999, the first time a study group put some ink in front of me. They divided this problem into a pie chart with three pieces: military, diplomatic, and economic. You cannot solve the problem just from the military perspective; we have to solve it from an interagency perspective.

We did not know what went in the economic or the political slice of the pie chart at the time, but since then, there has been a lot of work trying to develop a good framework. I will define framework here as a vehicle where if you address all the components within that framework, you pretty much covered most of the problem.

The Measuring Progress in Conflict Environments (MPICE) initiative is a fairly good framework. If you can address all the problems in those particular areas, you probably have a good framework for your analysis at the interagency level. My question to those looking at cyber warfare is: what is the framework for your analysis? Is it .mil, .gov, .com, or .other? Is it the finance

sector? Is it the military or power generation sector, or perhaps it is cyber offense, cyber defense, resilience, and redundancy?

I am fairly confident that the MPICE initiative is the right framework for us to look at interagency problems, but what is the right framework to look at problems within resource and cyber warfare? A final observation is that there are three future actions: we need to (1) reduce the drives of the conflict, (2) take the problem away or reduce it as best as possible, and (3) increase our institutional capabilities in each of those areas to deal with any particular conflict. We have seen examples: looking at al Qaeda, you want to remove those individuals or groups that are currently militants and extremists fighting us, but you also want to remove the reasons why people want to join al Qaeda, which removes the drivers of the conflict, and has the capacity and depth to deal with the overall problem.

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USEFUL TECHNIQUES

I have picked six techniques, presented in Figure 1, that have been used or are being used to look at analysis of interagency issues in complex operations. The key point to remember when reading the table is to look from top to bottom because you increase your ability to forecast outcomes; you can look farther into the future. However, inversely your confidence in what you are actually predicting or forecasting decreases rapidly. Right at the top is quantitative data, which include government and United Nations statistics, child mortality rates, or the economy and the Gross Domestic Product. These figures normally lag about a year behind. Consequently, you are looking at historical trends if you are using that kind of information.

Polling and surveys are a good way to get at what people are thinking. Again, though, you are really looking at what they are thinking at the time of the poll. You can ask future focus questions, such as how would you vote if there were an election now? However, answers do not necessarily properly represent time-sensitive issues.

	Analysis Method	Description	Examples
	Quantitative Data	Collection of input/output data associated with activities and generic country indicators	Country indices on corruption, economic growth, security, etc.
	Polling and Surveys	Public opinion or opinion of targeted groups	View of the U.S. before and after USNS Comfort port visits to South America
	Content Analysis	Survey popular media for identified themes	Failed States Index (Fund for Peace)
	Historical Analysis	Analysis of quantified data describing the actual behavior of systems across a wide range of historical cases	Success/failure factors in counterinsurgency operations
	Expert Opinion	Subject-matter Expertise and Focus Groups	Combatant Command Theater Security Cooperation Working Groups
	Modeling/Simulation and Gaming	Simplified representation of a complex system	COMPOEX

Figure 1 Six Useful Techniques

Content analysis is an interesting technique; it is under used. You look for key themes in a range of media publications, official documentation or other sources. For example, if you wanted to look at consumer confidence to spend money in the U.S. economy, you could survey all the media in the U.S. for phrases like

“foreclosures up” and “unemployment up,” which are indicators of a declining consumer confidence, at least media reported confidence, in the requirement to spend money. Then, you can look for positive phrases, such as “job gains” or “pay rise” in a particular industry.

Historical analysis is an interesting technique, also under used. Historical analysis describes the actual behavior of a complex system, but it does not provide reasoning for such behavior. For example, I can tell you that if you put a British rifleman on the foreign range and he can hit 100 targets on that range, if I put him in an exercise and he only hit ten of those targets, you will actually only hit one in combat operation. I do not know why the degradation factors are 100 to one from the range to the actual combat environment, but once I know that number, I can put it into a model to create computer-generated forces, calculate their range, calculate the number from the firing range, divide that by 100, and determine the probability of a hit.

Dr. Andrew Horsack’s work in counterinsurgency operations is a good example of how historical analysis can track enduring, key factors. We talk about hearts and minds; do you know what having the number behind hearts and minds adds to your side? If the populations support you, and populations support the government in a particular counterinsurgency operation, those hearts and minds act as a force multiplier of 40 for your activities. The opposite is also true if they support the insurgency, which is why we have trouble dealing with small numbers of terrorists, hundreds or thousands ties down hundreds and thousands of our troops.

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One of the problems with historical analysis is that you always come back to the question: how can history always be a predictor of the future? My rifle range example is true for the rifle barrel, and that is still current technology used today. If we replace the rifle barrel with a direct energy weapon in the British infantry, would that factor still be true? I do not know; that touches on the different issues with historical analysis.

I mentioned a little bit about expert opinion earlier, it is still one of the main techniques that were used to tackle some of these complex issues. There are a lot of different ways to use subject-matter experts other than to put them in a room and tell them to discuss national security. There are other techniques that can allow you to have more or less confidence in your subject-matter experts, even in terms of selecting potential subject-matter experts.

Certainly within DoD, if anyone from the State Department turns up to one of our war games, we are really pleased. It does not matter what they do in the State Department; we say we have a subject-matter expert, which may actually not always be the case. I will not talk a lot about modeling, simulation, and gaming. It is, however, a technique with a lot of potential.

MEASURING PROGRESS

Your structure objectives should include a context, an object, and a direction; that is from Ralph Keeney's book *Value Focused Thinking*, which has been used the last 15 years or so in a lot of DoD analysis. Let us say your object might be drugs; the context might be drug trafficking from Columbia, and the direction might be reduced drug trafficking from Columbia.

This example objective may seem simple, but when you start to get into interagency problems, your objectives start to get very complicated: which agency is in the lead and which is supporting? Are you supporting the overall objective? Are you just supporting part of the objective? It is very easy for strategy staff to get tied up in building very complicated objectives, but it does not really help the analyst when he/she measure potential success.

How to write and measure objectives is the 101 guide, but it is important to understand the difference between inputs, outputs, and outcomes in your system. A good example is an output-based focus in Iraq, going back four or five years when the target was 70,000 megawatts of power generation. That is an output measure. We focused on that at the expense of the outcome, which is what we really want to improve power generation in Iraq, so people were content with that.

Minimize the number of items that you need to measure. I say opinion differs. There are a lot of people that will tell you a way to direct hundreds of different measures. However, I have always viewed that as a menu to choose from; never try to apply the whole thing. I call it the rule of five. I do not know if there is any empirical evidence to support this, but whenever I see an objective, if someone wants to add activities, each objective tends to generate about five sub-activities on average. If under an activity, you want to create measures, each activity tends to generate about five measures. You can see, if you have 30 objectives, how very easily you can end up with a complicated number of measures. It is very difficult for a decision maker to deal with a large number of measures. You really have to focus on the key ones that tell you enough about the system.

A legitimate measure can be listed as “do no harm to related objectives.” For example, if you are in a stabilization operation and wanted to improve security, you are given two options: you can either patrol or you can institute a curfew. Looking exclusively in the security area, the curfew option is the more effective way to gain security.

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However, if you think about it politically and economically, that will damage those other objectives; if people cannot leave their houses, then they cannot trade or improve the economy. If they cannot leave their houses, then they will perceive you as an occupier, rather than someone there to protect, which will damage your political legitimacy. Therefore, measuring an objective and ensuring that it does no harm to other objectives is a legitimate measure, looking for the nil effect.

The real world is easier than the simulated world. As a community, roughly over the last 60 years, we have become very comfortable in coming up with fictitious countries and corresponding fictitious peoples and enemies. Because we do not understand the relationships in these complex environments, the minute you create a fictitious country and two fictitious people that maybe do not like each other, you have already created two assumptions that will dwarf any other analysis or variables that you might change in that analysis. Referring to real world data when and where you can will be much more useful in the early stages.

BRINGING IT TOGETHER

We learned earlier, through Jim Locher's presentation, how Czars do not work. Lead agencies do not work either, and departments tend to be capability-focused, rather than mission-focused.

I will offer an observation from the United Kingdom about one way we tried to tackle the requirement for issue teams. The Stabilization Unit is a mix of 30 personnel drawn from the Department for International Development, the U.S. Agency for International Development, the Foreign Commonwealth Office, the State Department, and also the Ministry of Defense. I would really describe them as a dating agency; their purpose is to introduce people from different agencies and departments in an effort to get them to work together. They know enough about what is going on in those other departments that they can do this effectively.

Certainly, when you have an interagency meeting and there is someone from the Stabilization Unit, you are reassured because you have a neutral referee in the room. Although they have no authority to tell you how it should be done, just having them there to, for example, simply translate from Department for International Development language into Ministry of Defense language is a very useful tactic.

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The Stabilization Unit is supposed to focus on any United Kingdom-related stabilization issues. Because of demand of operations, 95 percent of their time is dedicated to Afghanistan. You could almost view that as an Afghanistan issue team, as a potential template for what Jim Locher was suggesting we do.

ANALYSIS OF COMPLEX ENVIRONMENTS

Cause and effect in complex systems will continue to be elusive. This is every Prime Minister and President’s number one issue in the world. We have Nobel Prize winners, and the will of the entire population on this planet, working to solve this issue. All we need is to get people to spend more money.

It sounds simple, does it not? However, it is a complex environment, and as a result, we cannot quite work out which levers to pull to make it work. That will continue to be elusive for some considerable time. As analysts, you want to break everything down into two or three simple factors that dominate any particular decision or outcome. However, we just need to accept that it will be uncomfortable for us and we will not be able to determine a cause and effect for quite some time, if at all.

We have also been conditioned for years to think that we understand traditional warfare by breaking it down into those two or three variables. For example, in an air-to-air combat simulation, we might look at who sees whom first and the range and

type of the missile. We might think these are the three most dominant factors in an air-to-air combat, but somehow we inadvertently removed training as an issue. I would suspect that in real world engagements, the lack of training in the pilots, that we have come up against and shot down as a result, is probably the biggest issue. It is perfectly legitimate for us to see another way because we have assumed that worst-case pilots are as well trained as our own. In the real world, that is not the case. Maybe we lost sight of the fact that there is a bigger variable in this that we no longer consider analysis.

Let me give you another example that relates to resource warfare. In World War II in August 1942, the British Navy needed to run an urgent convoy to Malta, considered then a thorn in Hitler's side; he could not take it, and without it, we had some ability to conduct sea denial in the Mediterranean. August 1942 was a rough time for us; things were not going as well as they should have been for us. Malta was about to surrender if we could not resupply it.

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The analysts looked at that problem, and they came to the conclusion that if you loaded the ships so that every ship took a little bit of everything, you would only need to get two ships (i.e., one tanker and one dry store ship) to Malta to make it hold out, covering ammunition, cement, medical supplies, aviation fuel, petroleum, diesel, etc. They decided that 14 merchantmen would be enough to guarantee that at least two got through, with an escort of 44 warships.

That was a dangerous run. I think, in the end, only five merchantmen actually made it to Malta. We lost an aircraft carrier on the way, but it was important. They had done their operation analysis part well. They did not fight. How many vessels could we afford to lose to have some guarantee of getting vessels through?

As long as any two got through, one tanker and one other ship, then we would be fine.

A sobering thought, but 40 years later, in the Battle of the Falklands, the Atlantic conveyer was hit by a missile and took all but one of the British Army's helicopters that they were going to use to conduct air maneuvers on the Falkland Islands with it. Consequently, this impacted our fighting technique. We had to load troops on auxiliary landing ships and move them up the coast; one or two of those were hit during the battles, and we lost a lot of people as a result.

You would think, 40 years later, that we could identify a lesson learned about how to build convoys, but we had forgotten that lesson. Do not assume that the operations research in your community on cyber or resource warfare considers those techniques that we learned 60 or 70 years ago. We tend to forget about the simple techniques, but they can be very powerful.

Imagine gaming in the 1950s and 1960s and how we used nuclear escalation. It was one of the most useful techniques, but it was very hard to get anyone to escalate. Whenever you put anyone into any scenario, they immediately try to de-escalate, even if they are wearing the red hat, which says a lot for employing rational actors to be in charge of our nuclear arsenal. That is a good thing, but it was not very good from an analytical perspective. In the end, they had to start a scenario with phrases like "There are 100 warheads bound to the U.S. What do you want to do to get people to go to the escalatory stage?"

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We have come a long way with gaming since then; we have learned, for example, that if you want to get at those sorts of issues

with non-rational actors, you need to employ role players who can really get into character. You need to profile the cultures or the particular individuals you are trying to represent to effectively read and play into that role.

And then you will get a more interesting game. And if you cross out nuclear escalation and put cyber escalation there that's a potentially powerful technique that we could use to identify who would do what, when, and what our responses would be.

As analysts, we are always looking toward being certain about our results so you can say, "You can hang your hat on that result." Maybe the target we should be aiming for is validation in some of these complex systems. The same principle applies to the economic stimulus plan; we have tossed that coin three times now, at a trillion dollars a toss. It would be nice to have some confidence that it will come up tails if we have to toss that coin for a fourth time.