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Transformation

The Warfighter's Perspective

Do I think an adversary will need to think twice about invading his neighbor? You bet.

By Col. Kurt Dittmer, USAF

For people who place themselves in harm's way, it is easy to recognize a "transformational" capability. If you are going to fly a combat sortie into Country X, you analyze everything this adversary can throw at you and assess whether you can/will survive. If he has a lethal capability, like an SA-20, you have to ask, "What system (capability) do I need in order to survive and be combat effective?" If the answers aren't satisfactory from a system perspective for either survival or combat effectiveness, you can then assess your concept of operations to see if there is any way you can increase your odds or effectiveness. If it still looks bad, you start checking for a sinus block or a maintenance nondelivery, or begin the process of groveling to your commander to cancel the mission because failure is imminent!

Fortunately, in our recent history, we've not had to grovel to our leaders to beg out of combat sorties, and U.S. systems have proven combat effective. So let's change perspectives and evaluate the United States from an adversary's viewpoint. Our adversaries have had to make some difficult choices over the last century when they assessed whether to attack the United States or invade their neighbor (a U.S. ally) and risk U.S. retaliation. So what questions might they ask?

"What capability/system do I need to face the U.S. Armed Forces and its fill in the weapon system?" In the last century, Soviet leaders constantly asked that question of themselves. The North Atlantic Treaty Organization (NATO) probably never matched the overall combat power of the Soviet Union's forces available for a war in Central Europe. Yet NATO did field conventional capabilities to deny the Soviets the potential for an easy victory in a conventional battle. Innovative weapons and concepts, such as precision-guided munitions, antitank guided missiles, superior frontline fighters, and stealth weighed heavily in the Soviets' assessments for success of either their systems or their operational concepts.

Concerning the risks they could encounter, our current adversaries might ask themselves, "What capability/system do I need to face the U.S. Armed Forces and their F-15s or F-16s?" Adversaries are beginning to find viable answers to this question and are starting to field aircraft that are better than ours. Those without the resources to train pilots to beat U.S. pilots can invest in Integrated Air Defense Systems with double-digit surface-to-air missiles (SAM) that effectively counter current U.S. aircraft. However, neutralizing U.S. F-15, F-16, and F/A-18 fighter aircraft does not guarantee air dominance because the United States may be able to field either transformational defensive systems that neutralize adversary SAMs for survivability or transformational weapons that allow standoff precision engagement of critical target sets. Another strategy adversaries might choose involves re-establishing dominance over potential foes. Here too, superior training or concepts of operations can continue to give U.S. pilots the edge. If the United States does not continue to retain the technological lead and field new capabilities, at some point in time, we may see adversaries who determine that they can challenge us in a conventional war and will make engagement decisions based on that assessment.

So what do we do? We can field a standoff weapon for the fleet like the Joint Air to Surface Standoff Missile (JASSM) or JASSM-ER (extended range), thus forcing our adversaries to go back into their decision cycle because these weapons may be transformational. If they can't afford the investment necessary to shoot down a JASSM or the launching aircraft or if no technological solution enables this engagement, then they must assess the risk that JASSM presents. "Can it penetrate my hard and deeply buried targets that I hold dear?" "Has the United States bought enough of them?" If the answers to these questions come up in

Part of the Advanced Concept Technology Demonstration, the Tactical High Energy Laser (THEL) at the High Energy Laser Systems Test Facility (HELSTF) has successfully demonstrated the Army's ability to intercept rockets and artillery pieces. On June 6, 2000, the THEL intercepted its first Katyusha rocket. Since then, testing in November 2002 has illustrated the THEL's increased abilities with intercepts of smaller and faster moving artillery pieces.

About the next transformation system

Which transformational system is going to change the way an enemy will fight his next war or perhaps deter him from ever crossing the border in anger? Space-based missile defense? The Airborne Laser? The Crusader? The CV-22? The answer is an important one. I just hope someone is asking the question. A RAND analyst captured one of my greatest concerns when he said, "Cost matters, of course, but too often the most 'cost-effective' system is the one that will allow our forces to lose the war at least cost."[1]

favor of the United States, then they may think twice about invading their neighbor and facing the full brunt of U.S. combat capability.

Let's try this new analysis on a new and somewhat controversial system — the F/A-22. I recently spent quite a bit of time helping put together a study on this aircraft directed by Defense Planning Guidance, so I can reasonably assess its capabilities. If I represented Country X and were contemplating going to war against F/A-22s, this would be my take: "What capability/system do I need to face the U.S. Armed Forces and their F/A-22s?" I would turn to my air force commander and get the "Air Staff salute" because no aircraft produced in any country, now or for the foreseeable future, can match the aerodynamic performance of that airplane. Furthermore, the fact that it has integrated avionics, an Active Electronically Scanned Array radar, and eight air-to-air missiles means that your pilots will face the most lethal weapon system ever built. Therefore, an adversary who wants to counter the F/A-22 in the air will have to make significant investments requiring research and development and lots of time (unless another hot spot in the world is occupying our entire F/A-22 fleet because we didn't buy enough of them).

I would ask my ground force, air defense commander to assess what capability he or she has that measures up to the capabilities the F/A-22 will bring to the fight, and again I'll get the Air Staff salute. The commander can't answer the question because no one knows what the first engagement will even look like.

Instead of equipment, I decide I have to invade my neighbor now or never and ask my commanders to look at tactics, training, and procedures to counter the F/A-22's capabilities. I tell them to start a training program to prepare for imminent combat, which would look something like this: "Today you SAM operators will need to practice against a weapon system that has the radar cross section of a golf ball. It will be flying above 40,000 feet at Mach 1.5. Okay, got that picture? Good! These F/A-22s will be throwing Joint Direct Attack Munitions or small-diameter bombs at you outside your shot range! Now, in order to practice this profile, I would provide you something that can fly this profile, but we don't have anything even remotely close, so . . . any questions?"

Similarly, for the pilots: "Today, your adversary will be a two-ship formation of Raptors. To simulate what you will be seeing, I want you to take your four-ship out and place your radars on 10-mile scope, turn your radar-warning receivers off, and plan to start your defensive maneuvers outside your maximum weapons envelope. Plan on 'kill removal' eliminating a couple of members of your flight prior to the merge. For those who do merge, you will be facing AIM-9X and AIM-120 missiles from the most maneuverable fighter ever built. If you elect to run, a valid separation must exceed Mach 2.0. Any questions?"

"Sir, I think my sinuses . . ."

Do I think the Raptor is transformational? Yes. Do I think an adversary will need to think twice about invading his neighbor? You bet. In fact, what systems would Country X need to develop in order to counter this transformational weapon system, and how much would

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this cost? Can any adversary afford to bankrupt his country to facilitate an invasion of his neighbor? Or does he wait? Hmmm.

With such a compelling case for a transformational capability on a weapon system, I am amazed that we have to fight for the Raptor's very existence. Unfortunately, when I've been asked about the aircraft's transformational capabilities, it is usually to compare them with an equally transformational F-35! Why? Because the office with the aviation expertise analyzes aviation while the office that looks at directed energy or land forces looks at directed energy or land forces — it's what they know best, and it's what their analysis tools are optimized for.

Can someone in the Defense Department assess weapon systems from the adversary's perspective? It's probably not fair for the Services to take on that task, so we can only write papers or editorials and rhetorically ask the question. However, since we taxpayers want to get the best investment for our hard-earned tax dollars, I have to ask the hard questions. How is something like the unmanned combat air vehicle (UCAV) considered transformational because it doesn't have a human in it? From the adversary's perspective, I will ask, "What capability/system do I need to face the U.S. Armed Forces and their UCAVs?" It may very well be transformational because the United States is willing to fly UCAVs aggressively into harm's way because no U.S. pilots will be at risk. Or, if I can figure out the control-mechanism frequency and can force the entire fleet to crash without firing a shot, then maybe it isn't transformational. The adversary will assess the UCAV's range, payload, and survivability to determine whether his centers of gravity are placed at risk by this "transformational" weapon system, and he will determine whether or not the UCAV is transformational.

All that being said, we have limited resources and must use them wisely to ensure that every dollar spent brings the greatest return. A gun that shoots an extra two miles may be transformational when compared with other shorter-range guns, but will that extra two miles change the investment and engagement decisions of our potential adversaries? If we can get our arms around that analysis, then perhaps we will be on the path toward getting the best bang for the buck. A truly transformational weapon system for our warfighters would be one that instills so much fear in our enemies that we can win the next war without ever firing a shot. If we use that logic, perhaps the F/A-22 is truly transformational.

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