

## The Battle of Baachen October, 2008

It was cold, dark and malodorous, but the Americans sitting around the table were in an ebullient mood that reflected neither the place nor the dreary field rations sitting before them. Baachen had fallen, and beneath the terrace on which the door-cum-table had been set up, a ragged column of POW plodded along, herded by soldiers of the Big Red One with assault weapons at the ready.

Colonel Jeff Seitz, the tactical commander in that sector, had invited to lunch the American press contingent that had been covering his operation. Sitting at the head of the table, warming his hands on hot coffee in his canteen cup, he was relaxed and confident as he invited their questions.

The tall blonde girl spoke up first: “Well, Colonel, the US Army hasn’t always been this lucky in urban fighting. I remember a book by Charles Whiting called Aachen, Bloody Aachen that reported that this division paid dearly for its success in that city, and then came Hue and Mogidishu. How can you explain what happened here? Were we just lucky in picking the right enemy?”

Seitz smiled, and said, “One thing you can be sure about: this win was not luck. For one thing, the leaders of the bad guys included some men who were very capable and well experienced with urban in-fighting. They elected to use a tactic they calculated would cause us maximum grief: they took the advice of former Cheneyan fighters, dispersed their fighters throughout the city in small 4 to six man teams, and prepared to contest us building by building, block by block, neighborhood by neighborhood, never massing force, and relying on their knowledge of the terrain, ambushes and deceptions, mines, booby traps, and rocket propelled grenades to bleed us grievously. You will recall that on two occasions such tactics defeated the Russians, and required them ultimately to reduce Grozny to rubble. We did some damage here in Baachen, but far less than the Russians found necessary in Grozny. Moreover, our troops knew what they had to do to counter that enemy tactic, and they did it right. We did not resort to brute force. We attacked selectively, and only for high-payoff targets. We did not fall for the attrition trap. When we attacked a building, we almost always attacked from the top down, using small autonomous flight vehicles to lift soldiers from the streets to the rooftops. There was little element of chance in the outcome. These guys—”, he gestured toward the POWs, “thought they had us exactly where they wanted us, impaled on a stake before world opinion. But it turned out that it was their commanders on the stake, not us.

“I agree that fighting in cities has not been the strong suite of our Army. In 1944 Aachen was a tough fight, at long odds —5 defenders against one US attacker— but we won. In that battle, as in this one, we won not because of special urban training or exclusively because of our equipment. We won in large part because our soldiers had been working together for years: Today, as then, we are teams of trusted comrades, and we are individually and collectively very good at fire and movement. And we are so because we are in an Army that has learned from its shortcomings, not only in the past battles you mentioned but also in every single operation it conducts, in peace and in war. In this outfit, every day in combat is a day in training. Those prisoners that you see down there are evidence of ‘lessons learned’.”

The reporter with the white beard and the baseball hat-on-backward shot the next question: “But Colonel, with all due respect, here you have asserted control over a city of ten times bigger than Aachen,

and you have done it with fewer troops. What's the magic, Colonel? There has to be some lever operating here that has not been available in the past."

Seitz sipped his coffee while he considered his reply.

"Lever....leverage. I would propose there were at least three leveraging decisions in the past five years within the Department of Defense. The first was the decision by the Secretary of Defense in 2003 to accelerate a brace of maturing DARPA information technology programs —mostly intended for the Future Combat Systems, a 2010++ acquisition— to be procured and fielded to raise *ad interim* the readiness of the total force for urban contingencies like we faced here. He recognized that not all technology marches to the same drummer, and that advances in the field of information technology proceed much faster than those for military platforms and weapons. I don't want to flood you with nomenclature and acronyms, but the accelerations included the A-160 Hummingbird, the Digital Radio Frequency Tags, or DRaFT, NetFires, and to these DARPA added advanced communications to support tactical and operational networks in an urban environment. These DARPA systems helped us a lot.

"The second was the decision of the Secretary of the Army in 2002 to transform the Army personnel system by abandoning individual replacements for units of the combat arms in favor of organizing for readiness around units stabilized for three years, so that combatants thereafter could benefit from the same sort of accumulated professionalism and trust that distinguished this unit's predecessor in 1944, an outfit whose soldiers who had been training together more than four years, and fighting together from North Africa, through Sicily, France and Belgium. Any infantry fight is tough, but any infantry veteran will tell you that if you have to go into battle, join a unit that knows how to work together, fight together, and win even in tough fights like this one. This one is just such a unit!

"There was a third decision of equal import. The US Army had developed throughout the 20<sup>th</sup> Century an educational system second to none in the world, a school structure for continuing education of its leaders unparalleled in any other profession. But those institutions were predicated upon having officers and NCOs transfer from their unit to a school for resident training, upon completion of which they were almost never returned to the unit they had left. Moreover, resident training not only failed to benefit a unit, but also usually came after the recipient's experience on the job, and rapidly became outdated by the constant flux in technology and doctrine. The decision was to adopt best commercial practices for continuing education, and to use internet-based distance learning coupled with in-unit mentoring. That transformed leader development in our unit, meaning more competent officers and NCOs. We have been able to grow our own leaders.

"Without those decisions, I doubt if the outcome that you have seen here would have been possible."

This prompted the little brunette to interject: "But how exactly did all those DARPA things make this operation different from those in the past?"

Seitz again paused, cup to lip, thinking through what he could say about the DARPA systems.

"Let's start with the A-160 Hummingbird. That is an unmanned aircraft that you have not seen because it is based out of theater, and flies in to loiter above us 24 hours per day, high up where you

can't see it or hear it. Each Hummingbird has an endurance of more than 24 hours, and it carries radar and other sensors that stare down at our battlefield, an on-board queuing capability to optimize the sensor selection for a specific target, an on-board fusion capability to sort out false alarms and to detect and classify targets, plus communication gateways to connect the ISR local network on which the bird operates directly with me and my commanders, reporting changes in friendly or enemy dispositions. The gateway capability also allows the bird to connect directly to NetFires or HIMARS rocket fire control computers to deliver munitions without a human in the loop. The fire mission is sent to the computers, while notice is provided to all commanders in whose area the fires are being directed—any commander can cancel the fire mission. Without an affirmative cancellation, the mission is fired. The whole process takes seconds, instead of the tens of minutes we required for conventional artillery. That direct sensor-to-shooter linkage permitted us to engage successfully very transient or fast-moving targets, and also permitted us to minimize collateral damage. The Hummingbird has a communications suite on it that also proved useful for maintaining our ability to communicate among ourselves and with our higher headquarters, transmitting to us automatically through the Department of Defense global grid.

“Next I mentioned DRaFT. Digital Tags are, as their name suggests, small, chip-equipped ID cards on the person of our soldiers, and on our vehicles, that interact with our overhead radars — whether of the Army or the Air Force— to assure identification and location of friendly forces and to de-conflict the airspace. Moreover, they are cheap enough, and sufficiently secure to warrant distributing them widely throughout allied or aligned forces, and thereby to help prevent fratricide, and to facilitate collaboration with fires and maneuver. You should understand that these tags in effect send a message embedded in the radar return to the Hummingbird, so they are a form of communication.

“NetFires. You've heard us talking about LAMs and PAMs. Those names refer to Loitering Attack Missiles and Precision Attack Missiles, both of which arrive on the battlefield pre-packaged in small containers --“rockets in a box” that I am certain you have seen around here. Within the past three years the Army fielded mini-NetFires, missiles tailored for urban combat, smaller, and more agile, but able to strike very precisely exactly where we need ordnance with either lethal or non-lethal effect. Each of these missile systems relies on networking technologies that allow the loitering missiles to pass data to what could be dozens of precision attack missiles fired to engage specific targets within the target area over which the LAM is loitering. These in-flight data exchanges permit in-flight reprogramming to make even the most elusive target vulnerable as never before, even in the restrictive city canyons.”

The reporter shook her head. “But how did all that stuff help you in finding the small groups of enemy lurking in alleys and side-streets? What did those tags on our people have to do with those prisoners down there? How did you affect them? Why did they give up? “

Seitz smiled, and told her that she was asking the right questions.

“Knowing precisely where all our own assets were at any given point in time was the most important information I needed for planning and executing the operation. Actually, the tags plus the Hummingbird radar usually told me what I needed to know —a secure passive method that requires no tell-tale radio signals— but our position location system had redundant back-up: GPS plus inertial navigation devices that allowed my leaders to know where every soldier was located in three dimensions: locus not only in what building, but in what room on what floor. On top of that, we can position any of our radios by timing its signals.”

She was still puzzled: “But knowing where your guys were located couldn’t help you unless they had eyes on a target, and it seems to me that the enemy was doing everything he could to deny you that advantage. How did you counter elusive ambushers? What kind of pressure did you bring to bear on the kids with Kalishnikovs and RPGs?”

“Our eye in the sky, the radar aboard the Hummingbird, can see enemy as well as friendly, can detect motion, and on command, send us an image of an object as small as four inches. But we had other ways of looking into the streets and alleys.” Seitz stood up, walked around to where the brunette was sitting, and pointed to a building across the street. “Look over there at the corner of that building. Do you see that object sitting on the ledge?”

She stood up the sight along his arm.” You mean that blocky thing at the end of the wire?”

“That’s it,” Seitz said. “What you are looking at is one of the small unmanned aerial vehicles that enabled us to see what was happening in the streets. That perched UAV acts as the terminus for an ADDR, an air deployed rope, The rope is actually a fiber optic cable with small sensors embedded along its length. The UAV snaked across the building tops, unreeling its cable, and as it was approached the cable’s end, it perched up there where it could power the sensors, and transmit what they were detecting on the streets up to the Hummingbird. There ADDR information could be integrated with what the radar was seeing on its own, then sent to us on the ground. If I told one of my leaders to clear a given area, the first thing he would do, using the Hummingbird and ADDR, is to establish continuous observation over the streets there. One technique we found useful was to patrol up and down the streets above the ADDR cables with another UAV, a larger and noisier bird, in the hopes that the enemy would shoot at it, especially with an RPG. If they did, we had demonstrated hostile intent and a precise location, so we could shoot back then and there with a LAM or a PAM, and take the shooters out.”

“Didn’t you sacrifice a lot of UAV doing that?”

“We lost a few,” Seitz said, “But for that baiting mission we used fast birds with active protection against RPGs, The bird could shot apart with a cloud of bullets any rocket that came up at it. The birds we lost were shot down by lucky shots from assault rifles.”

This brought beard-and-baseball-cap back into the conversation. “Colonel, we have heard that you had major problems communicating because enemy jamming disrupted your network. Is that true?”

Seitz chuckled. “You take enemy propaganda too seriously. There was plenty of enemy jamming all right, and we did everything we could to convince him that it was working. But he was attacking the frequencies that we had been using for training and operational rehearsal. When we came in here, we kept up dummy traffic on those same nets, and he obliged us by attacking there while we transacted our real business on networks elsewhere in the electronic spectrum, at higher frequencies and with different wave forms very resistant to jamming, and with low probability of intercept. Moreover, we used highly directional antennae at low power that made it even difficult for him. The upshot was that he was only a minor nuisance for our tactical communications –our local area networks and command grids, with our reconnaissance, surveillance, and target acquisition means, formed a diverse network that never let us down.

“Another technology that proved invaluable was a DARPA system that allowed us to plug into the electrical sockets of the buildings we were in. We took in gadgets that looked like nightlights or those deodorant pads. By plugging in one of these gadgets to wall sockets, soldiers on each of the floors could talk to each other without having to use their radios. Then when they left the room, they could set the gadget to sense if someone or something was entering the place behind them. There was a larger unit with more smarts that could process all the sensings on several floors, or in a whole building, send notice of the intrusion to my commanders through our local area command network, and even indicate whether it was enemy or neutrals. We used a similar scheme system to transmit among buildings using the water and sewer pipes, electrical power lines and telephone wires that remain in place even after buildings were heavily damaged. Even though the electrical and telephone grids had switches and transformers, DARPA figured out a way to sense where active connections could be established between a sender and receiver, and to route their traffic without relying on wireless transmissions. This means of connecting fighters over the existing wired infrastructure proved to be highly effective and secure. The enemy commanders never figured that out.”

“OK, lets say you hoodwinked them, and you got control of the streets. But what good did that do? Couldn't they just stay in the buildings, or even go underground?”

Seitz smiled. “They could and they did. But that's what we wanted them to do, because our overall concept was to segment the city, set up a tightly controlled zone, and then strike selectively therein. We had in NetFires and mini-NetFires missiles designed to hone in on transmitters like active cell phones, and we made extensive use of imitative deception and selective jamming. Although the enemy operated dispersed and decentralized, he had a command system, and he did from time to time communicate among the combatant groups, and to send messages outside the city.”

“But how did you know where a key commander was located? How did you know where and when to strike?”

Seitz replied that he could not comment on all the sources and methods used for those purposes, but that he was cleared to talk about what led to the capture of “Commander Abdul.”

“Commander Abdul, as you know better than I do, built up a world-wide audience as spokesman for the dictator, Ahmad Kazek. In the Information Warfare of this operation, Abdul has been the most prominent symbol of resistance here, and the prime motivator for these chaps marching past us. Every day, around eleven in the morning, Commander Abdul has been making a long bombastic radio broadcast to the world in which he used half truths and outright lies to report to Ahmad Kazek about Abdul's triumphs here in Baachen. Each broadcast was carefully coordinated to boost morale among his small units within the city, and to lend credence to propaganda disseminated outside the city by worldwide web broadcasts of video segments and ‘interviews’ with locals. One of our missions was to shut down Commander Abdul.

“One way we accomplished that mission was to intercept Abdul's Internet traffic, including the videos he tried to send out. For Abdul to disseminate his message, he had to get to an access point that allowed him to put his traffic onto the World Wide Web. We intercepted the traffic, and substituted our own. I am sure that you have seen or heard of some of the results. It does not take long to discredit

someone in the eyes of the world when the truth is substituted for absurdities. I cannot tell you technically how this was done. But you can judge for yourself whether it worked.”

“However, finding an eliminating Abdul turned out to be easier said than done, because while it seemed certain that Commander Abdul was, as he claimed, in Baachen, he moved several times each day, and he always used antennae for his broadcasts that were remote from the site from which was speaking. However, two days ago we caused a number of significant acoustic events –specially orchestrated explosions-- to occur during his scheduled broadcast, events that his microphone picked up, and transmitted to the world as background noise. Since we knew when and where those events occurred, it was a relatively simple matter to calculate where he and his microphone were located, and before he finished his broadcast, our strike force pounced on him. As you know, we were successful; he died of wounds after we got to him.

“Our operations against other local commanders produced 4 out of 5 similar successes: what in effect happened is that we decapitated the planned resistance, and it collapsed.

“There were twenty four hours of eerie quiet, broken by our intensive psyops campaign, and our occasional strikes on small detachments trying to move out from cover. Then we began to see white flags, and the start of the POW parades.”

The tall blonde asked whether he believed this approach would work in other urban contingencies, against other enemies.

Seitz replied that he was certain that every circumstance would dictate a unique response, but the US Army finally had in place policies, training, and materiel that encouraged him to believe that it could defeat any enemy on urban terrain as decisively as his troops had defeated those of Commander Abdul.

“But,” he said, “The evolution of measures and countermeasures will require us to continue to learn operationally, and to press persistently for technological advantage. The secret of future victory — as it has been here in Baachen— is simply superior information enabling our adaptation to new reality.”

A major came up with a paper in hand to which Seitz’ turned his attention, his demeanor signaling that the lunch and the interview were at an end.